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ABSTRACT

This is the fifth in a series of annual studies conducted by the Alberta (Canada) Department of Education in order to gather information about the nature and extent of the growth and development of instructional computing in Alberta schools. Areas covered by the survey include: (1) description of the school population; (2) schools that have designated an individual as computer coordinator; (3) teachers making "extensive use" of computers; (4) number of microcomputers in schools; (5) location of microcomputers in the schools; (6) schools having specially equipped microcomputers (i.e., with French characters and/or attachments for physically disadvantaged students); (7) arrangements for microcomputer maintenance; (8) access to microcomputers outside normal class time; (9) percentage of students who have studied or will study keyboarding; (10) administrative uses of microcomputers; (11) microcomputer-related training for teachers; and (12) buildings and facilities. Findings are reported separately for all schools, then for elementary, junior high, senior high, mixed divisional, and urban and rural schools. Almost 200 tables and 30 graphs are used to present the results of analyses of the data received from 1,345 Alberta schools. Comparison of these data with the findings of prior studies suggests that, although the number of computers in Alberta schools continues to grow, the rate of growth is beginning to diminish. The survey instruments and cover letters are appended. (MES)

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MICROCOMPUTERS IN ALBERTA SCHOOLS - 1986

a final report
on the results of a resource survey of

ALBERTA SCHOOLS

conducted by

Dr. Milton W. Petruk, Professor

Industrial and Vocational Education

Faculty of Education

University of Alberta
Edmonton, Alberta

on behalf of

Alberta Education
Media and Technology Branch

June 1986

EXECUTIVE SUMMARY

Early in 1986, the principals of all schools in Alberta were asked to complete a survey which requested information about the nature and extent to which microcomputers were being used in the schools. A total of 1,345 out of the 1,489 surveys (90.3%) were completed. Following are the major findings resulting from this survey:

* On January 1, 1986, the total number of microcomputers in the 1,345 Alberta schools surveyed was 20,551. Based on these findings, it is estimated that the total number of microcomputers in all 1,489 Alberta schools is 22,752. This is an increase of 6,428 over the estimated number of microcomputers reported on January 1, 1985.

* It is estimated that in 1986, the 1,345 schools surveyed will purchase 3,797 additional microcomputers. This would bring the total number of microcomputers in the 1,345 schools surveyed to 24,348 by January 1, 1987. Based on these findings, it is estimated that the total number of microcomputers in all 1,489 Alberta schools will be 26,955 by January 1, 1987.

* Based on the results of this survey, it is estimated that the ideal number of microcomputers needed in all 1,489 Alberta schools is 36,783.

* The ratio of students to microcomputers in Alberta schools on January 1, 1986 was 20.3:1. The estimated ratio of students to microcomputers on January 1, 1987 is 17.1:1.

* The largest proportion of microcomputers in Alberta schools is APPLE type (69.3%). This proportion is slightly lower than that reported one year ago (72.0%). The second largest proportion of microcomputers in Alberta schools is IBM type (15.2%). This proportion is considerably higher than that reported one year ago (6.3%).

* During 1986, schools anticipate that only 54.9% of the microcomputers they purchase will be APPLE type while 37.4% will be IBM type. Yet schools report that ideally, 76.6% of the microcomputers should be APPLE type and only 15.0% should be IBM type.

* The largest proportion of microcomputers in Alberta schools is located in microcomputer laboratories (42.7%) while the second largest proportion (21.8%) is located in business education classrooms.

* During 1986, schools anticipate that only 31.5% of the microcomputers they purchase will be allocated to microcomputer laboratories while 34.6% will be allocated to business education classrooms. Yet schools report that ideally, 42.0% of the microcomputers should be allocated to microcomputer laboratories while only 13.4% should be allocated to business education classrooms.

* Most schools (77.2%) have designated an individual in the school as the "computer coordinator". Junior high schools have the highest proportion of schools (88.6%) in which an individual has been designated as the "computer coordinator".

* Most schools (71.9%) reported at least one teacher, who, in the opinion of the respondent ,was an "extensive user" of microcomputers in the classroom. The findings indicated that 9.9% of all teachers in Alberta schools are considered to be "extensive users" of microcomputers in the classroom. The largest proportion of teachers who are considered to be "extensive users" of microcomputers is in elementary schools (11.8%) while the smallest proportion is in high schools (4.8%).

* Only 8.9% of the schools reported having microcomputers that were specially equipped to generate French characters. It is estimated that an additional 6.3% of the schools will purchase special equipment to permit microcomputers in their schools to generate French characters during 1986. Respondents reported that ideally, 21.5% of the schools should have microcomputers that are specially equipped to generate French characters.

* Only 3.3% of the schools reported having microcomputers that were specially equipped for use by physically disadvantaged students. It is estimated that an additional 0.7% of the schools will purchase special equipment to permit microcomputers in their schools to be used by physically disadvantaged students. Respondents reported that ideally, 16.7% of the schools should have microcomputers that are specially equipped for use by physically disadvantaged students.

* Only 6.2% of the schools reported that students had no access to microcomputers outside of class time. Only 1.3% of the schools reported that teachers had no access to microcomputers outside of class time.

* Respondents generally reported that ideally, a greater emphasis should be placed on teaching "keyboarding".

* Schools are just beginning to use microcomputers for administrative purposes with 41.7% of the schools reporting that they were using word processing software and 27.2% reporting that they were using integrated software.

* Respondents reported that **most** of the teachers in their schools received training in the use of microcomputers from school workshops (44.2%), district-sponsored workshops (21.6%) and from self-teaching (11.7%).

* Very few schools reported that **most** of the teachers in their schools received training in the use of microcomputers as a result of one university or college course (1.9%), two university or college courses (0.5%) or three or more university or college courses (0.2%).

* Respondents reported that **most** of the teachers in their schools needed additional training in *integrating microcomputers into the curriculum* (67.1%)), *using productivity software* (51.1%), *introductory computer literacy* (23.8%) and *computer programming* (18.4%).

* The single problem which 55.8% of the respondents identified to be of **high** importance was *procuring and maintaining software*.

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I. INTRODUCTION

While computers have been in use in a number of Alberta schools for nearly a decade, it was not until 1981 that Alberta Education began formally to encourage the use of computers in schools. This encouragement came in many different forms. It came in the form of leadership as the result of the creation of the Computer Technology Project in Alberta Education and the formation of a Minister's Task Force on Computers in Schools. It came in the form of instructional support as the result of new curricula in computer literacy and revision to existing curricula to provide for the use of computers and computer software as basic resources in the curriculum. Perhaps most important, it came in the form of funds to assist school boards to purchase computers. It came in many other forms as well, such as teacher in-service and courseware evaluation.

This study is the latest of a series of annual studies which have been conducted in order to gather information about the nature and extent of the growth and development of instructional computing in Alberta schools. It is based on responses gathered from most of the schools in the province and should help to provide educators and administrators with current and accurate information about instructional computing in Alberta schools.

A total of 1,489 Alberta schools were surveyed to determine the number of microcomputers in the schools. This number differs from the number of schools surveyed in 1985 (1,509 schools were surveyed in 1985) as a result of 25 school closures and the opening of 5 new schools. To date, 1,345

(90.33%) of the survey forms have been returned. This report is a summary of the responses received from these schools. In addition, where appropriate, these findings have been extrapolated to estimate what the findings would likely have been if all 1,489 schools had returned their survey forms.

The results showed that the total number of microcomputers in Alberta schools as reported by the 1,345 respondents was 20,551. To estimate the actual number of microcomputers in all 1,489 Alberta schools, this result was linearly extrapolated. The results of the extrapolation suggested that the actual number of microcomputers in Alberta schools effective January 1, 1986 was 22,751. The estimated total number of microcomputers in Alberta schools effective January 1, 1985 was 16,324. This represents an increase of 6,427 microcomputers (39.4%) during the twelve month period from January 1, 1985 to January 1, 1986.

Another aspect of the survey sought to determine how many microcomputers schools would likely buy in the next fiscal year. While some schools stated that they were only able to make a tentative projection because of uncertainty about budgets, the results of this projection showed that the 1,345 respondents expected to purchase an additional 3,797 microcomputers during the next fiscal year. Extrapolating this result to all 1,489 schools showed that the total number of microcomputers that Alberta schools would purchase in the next fiscal year would likely be 4,204, an increase of 18.5%. These figures suggest that while the number of microcomputers in Alberta schools continues to grow, the rate of growth is starting to diminish.

II. DESIGN OF THE SURVEY

A. Population

This survey was designed to gather and analyze information about instructional computing resources in Alberta schools. It was a mail survey which included all schools in the province that offered instruction in kindergarten (Early Childhood Services or ECS) to twelfth grade. Excluded from the survey were all privately operated schools (including private ECS schools) and other institutions whose primary function was something other than schooling (e.g., schools operated in hospitals and correctional institutes).

A list of the names and addresses of all schools meeting these criteria was provided by Alberta Education. The total number of schools on this list was 1,489, down slightly from the number of schools surveyed in 1985. The decrease was the result of 25 school closures and 5 new school openings (1,509 - 25 + 5 = 1,489). This group of schools then became the population for this survey.

B. The Survey Instrument

Since 1981, there have been four other surveys conducted in Alberta to monitor the number of microcomputers in Alberta schools. The last of these was conducted in February of 1985 and the results of that survey were reported in Microcomputers in Alberta Schools, published in June 1985 (Petruk, 1985).

The results obtained from the 1985 survey were maintained in a database (DBase III) and were used to generate survey forms for this survey. Every school in the province received a survey form pre-printed with information as reported by that school in 1985. Each school was requested to review and update the information pre-printed on the survey form effective January 1, 1986. It was felt that this approach, in which respondents needed only to make corrections to pre-printed information, would reduce the time and effort required to complete the survey and would help to insure more accurate results. A sample of the survey form, along with other materials that were mailed to each of the schools as part of the survey package, are attached in Appendix A.

A survey package was then mailed to the principal of each school in February of 1986. By the end of March 1986, approximately 70% of the schools had returned their completed survey forms. A follow-up letter was sent to the remaining 30% and by May 1, 1986 a total of 1,200 of the 1,489 schools surveyed (approximately 80%) had returned their completed survey forms. A further telephone follow-up was undertaken and by June 1, 1986, 1,345 returns (90.33%) had been received. The results presented in this report are therefore based on a summary of the responses received from 1,345 Alberta schools.

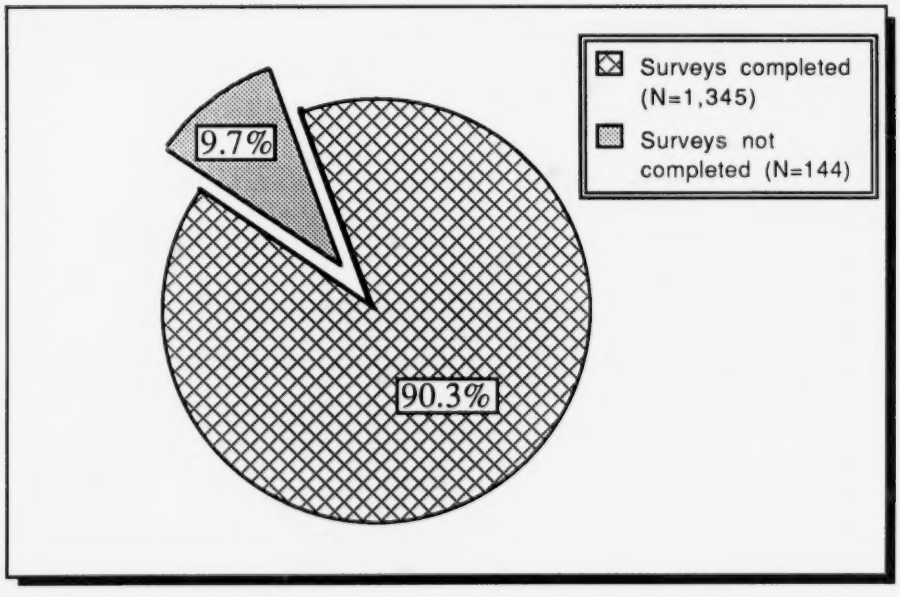
III. FINDINGS - ALL SCHOOLS

A. Description of the Population - All Schools

Survey forms were mailed to a total of 1,489 Alberta schools. Of these, 1,345 schools returned completed survey forms, representing a response rate of just over 90%. Graph 1 depicts the survey response rate obtained in this study.

GRAPH 1

Survey Response Rate - 1986



A total of 496 of the schools surveyed (36.9%) were located in Alberta's two largest cities, Edmonton and Calgary. The remaining 849 schools (63.1%) were located in other Alberta cities and towns. The enrolment

in the 1,345 schools surveyed was 417,361 students and the number of certificated teachers in these schools was 24,026. The number of students attending schools surveyed in Edmonton and Calgary was 193,751 (46.4%) while the number of students attending schools surveyed in other Alberta cities and towns was 223,610 (53.6%).

To categorize the schools accurately by instructional level, it was necessary to establish six categories. These included the following:

CATEGORY 1 - any school which includes students in the range of ECS to sixth grade (elementary)

CATEGORY 2 - any school which includes students in the range of seventh grade to ninth grade (junior high)

CATEGORY 3 - any school which includes students in the range of tenth grade to twelfth grade (senior high)

CATEGORY 4 - any school which includes students in the range of ECS to ninth grade (elementary-junior high)

CATEGORY 5 - any school which includes students in the range of seventh grade to twelfth grade (junior-senior high)

CATEGORY 6 - any school which includes students in the range of ECS to twelfth grade (elementary-junior-senior high)

The total number of schools in each of the categories identified above is summarized in Table 1. This table also shows the number and proportion of teachers and students attending schools in each of the categories.

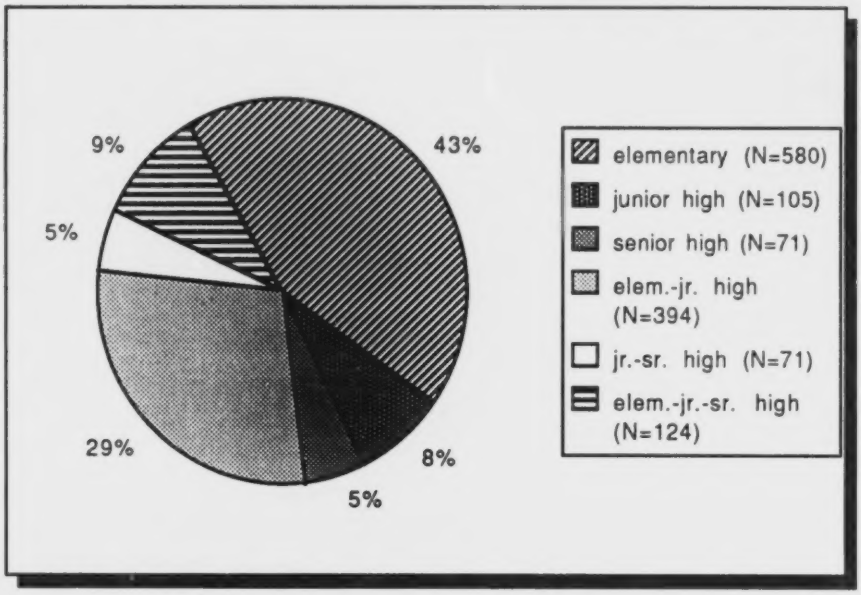
TABLE 1

Schools Participating in Survey
(by Category)

CATEGORY	Number of Schools	Number of Teachers	Number of Students
1 (elem.)	580 (43.1%)	8,743	159,723
2 (jr. high)	105 (7.8%)	2,531	43,006
3 (sr. high)	71 (5.3%)	3,412	63,149
4 (elem.- jr.)	394 (29.3%)	5,235	86,816
5 (jr.- sr.)	71 (5.3%)	1,821	29,586
6 (elem.- jr.- sr.)	124 (9.2%)	2,284	35,081
TOTAL	**1,345 (100%)**	**24,026**	**417,361**

GRAPH 2

Schools Participating in Survey
(by Category)



B. Computer Coordinators - All Schools

Since the introduction of significant numbers of microcomputers into schools it has become apparent that there are many new tasks that must be performed in relation to the microcomputers. As a result, in many schools, an individual has been designated as the "computer coordinator". Respondents were asked to indicate whether their school had an individual who had been identified as the computer coordinator by providing his or her name and telephone number on the survey response form. A total of 1,039 of the 1,345 respondents (77.2%) provided the name of the computer coordinator in the school. These results, extrapolated to the total school population suggest that

the total number of schools in Alberta in which an individual has been designated as the computer coordinator is 1,150.

The school category in which the largest proportion of schools had computer coordinators was that of the junior high school. A total of 93 out of 105 (88.6%) of the respondents from the junior high school category provided names of computer coordinators. The school category in which the smallest proportion of schools had computer coordinators was that of the elementary-junior high school. In this category, only 265 of the 437 respondents (67.3%) provided names of computer coordinators. Table 2 shows a breakdown of the proportion of schools in which an individual has been designated as the computer coordinator by category.

C. Teachers Using Computers - All Schools

One important element in the implementation of a program of instructional computing is the teacher. To assess this element, respondents were asked to list the names of teachers in their schools who, in their opinion, were making "extensive use" of computers in their classrooms. A total of 967 respondents (71.9%) indicated that there was at least one teacher in the school who was making "extensive use" of computers in the classroom. The number of teachers in all schools who were identified as making "extensive use" of computers in the classroom was 2,388 (9.9%). Table 2 shows the distribution of coordinators and teachers who make extensive use of computers in the classroom by category.

TABLE 2

Distribution of Computer Coordinators and
Teachers Who Make Extensive Use of Computers
(by Category)

CATEGORY	Number of Coordinators	Number of Schools with at least one comp. user	Number of computer users
1 (elem.)	467 (80.5%)	412 (71.0%)	1,031 (11.8%)
2 (jr. high)	93 (88.6%)	84 (80.0%)	207 (8.2%)
3 (sr. high)	59 (83.1%)	64 (90.1%)	165 (4.8%)
4 (elem.- jr.)	265 (67.3%)	250 (63.5%)	586 (11.2%)
5 (jr.- sr.)	53 (74.6%)	61 (85.9%)	157 (8.6%)
6 (elem.- jr.- sr.)	102 (82.3%)	96 (77.4%)	242 (10.6%)
TOTAL	**1,039 (77.2%)**	**967 (71.9%)**	**2,388 (9.9%)**

The total number of elementary (category 1) schools surveyed was 580 (43.1% of the schools surveyed). The student population in these schools was 159,723 (38.3% of the student population in the 1,345 schools surveyed) and the teacher population was 8,743 (36.4% of the teacher population in the 1,345 schools surveyed). A total of 467 of the elementary schools surveyed (80.5%) had an individual designated as the computer coordinator and 412 of these schools (71.0%) had identified one or more teachers as "extensive users" of computers in the classroom. The total number of teachers in Alberta elementary schools who have been identified as "extensive users" of computers in the classroom is 1,031 (11.8% of the teacher population in the 580 elementary schools surveyed).

A total of 105 (7.8% of the schools surveyed) junior high (category 2) schools in the province were surveyed. The student population in these schools was 43,006 students (10.3% of the student population in the 1,345 schools surveyed) and the teacher population was 2,531 (10.5% of the teacher population in the 1,345 schools surveyed). A total of 93 of the 105 junior high schools surveyed (88.6%) had an individual designated as the computer coordinator and 84 of these schools (80.0%) had identified one or more teachers as "extensive users" of computers in the classroom. The total number of teachers in Alberta junior high schools who have been identified as "extensive users" of computers in the classroom was 207 (8.2% of the teacher population in the 105 junior high schools surveyed).

The number of senior high schools (category 3) surveyed was 71 (5.3% of the schools surveyed). The student population in these schools was 63,149 students (15.1% of the student population in the 1,345 schools surveyed) and the teacher population was 3,412 (14.2% of the teacher population in the 1,345 schools surveyed). A total of 59 of the 71 senior high schools surveyed (75.6%) had an individual designated as the computer coordinator and 64 of these schools (82.1%) had identified one or more teachers as "extensive users" of computers in the classroom. The total number of teachers in Alberta senior high schools who have been identified as "extensive users" of computers in the classroom was 165 (4.8% of the teacher population in the 71 senior high schools surveyed).

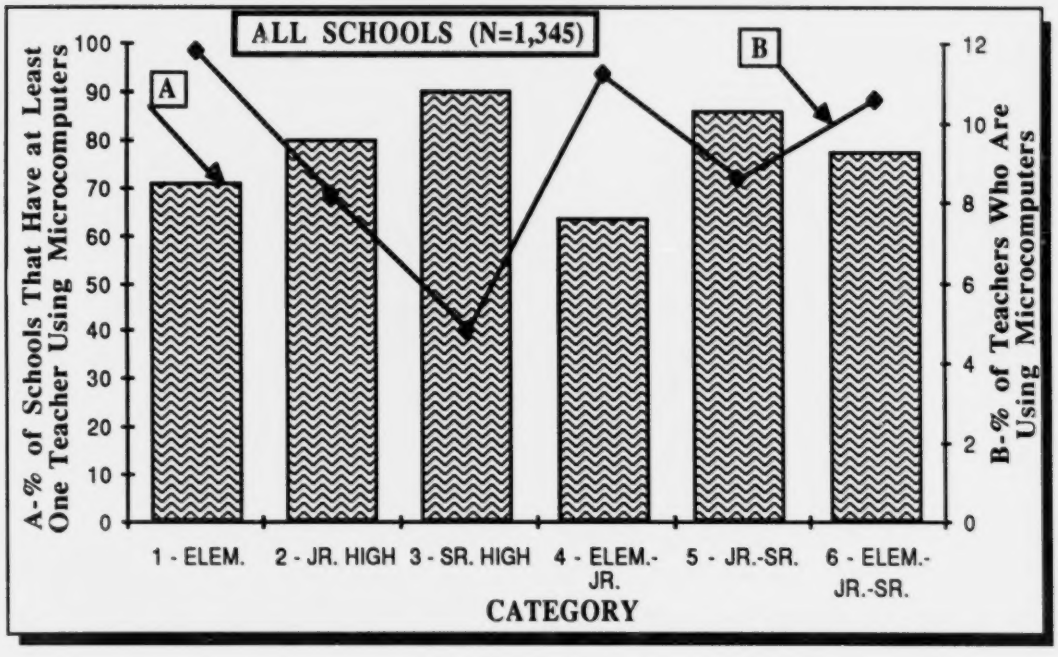
There are 589 (43.8%) mixed divisional schools (categories 4, 5, and 6) in the province. The student population in these schools was 151,483 students (36.3% of the student population in the 1,345 schools surveyed) and

the teacher population was 9,340 (38.9% of the teacher population in the 1,345 schools surveyed). A total of 420 of the mixed divisional schools surveyed (71.3%) had an individual designated as the computer coordinator and 407 of these schools (69.1%) had identified one or more teachers as "extensive users" of computers in the classroom. The total number of teachers in mixed divisional schools who have been identified as "extensive users" of computers in the classroom was 985 (10.5% of the teacher population in the 589 mixed divisional schools surveyed).

The results presented in Table 2 indicate that the elementary-junior high school category (category 4) reported the lowest proportion (67.1%) of computer coordinators while junior high school category (category 2) reported the highest proportion (88.6%). As illustrated in Graph 3, the elementary-junior high school category showed the smallest proportion of schools (63.5%) that have at least one teacher who is making "extensive use" of computers in the classroom, while the high school category (category 3) showed the largest proportion (90.1%). Yet the high school category shows the smallest proportion of teachers (4.8%) who are making "extensive use" of computers in the classroom. This might be the result of a greater degree of specialization at the high school level.

GRAPH 3

Proportions of Schools Having Microcomputers and
Proportions of Microcomputer Users in Schools by Category



D. Number of Microcomputers - All Schools

The total number of microcomputers reported by the 1,345 schools included in this survey was 20,551. Extrapolating this total to 1,489 schools, it is estimated that the total number of microcomputers in Alberta schools effective January 1, 1986 was 22,751. This is an increase of 6,427 (39.4%) over the estimated total number of microcomputers in Alberta schools effective January 1, 1985. In completing the survey form, schools were asked to indicate the number of computers located in the school in each of seven brand categories. The brand categories were selected because they identify the general level of computing power available and because they

provide a clear indication of the kinds of software needed. Table 3 and Graphs 4 and 5 show a detailed breakdown of the number of microcomputers in Alberta schools by brand category. Quantities in Table 3 indicated in italics denote the quantities reported in 1985 and are shown for comparison purposes only.

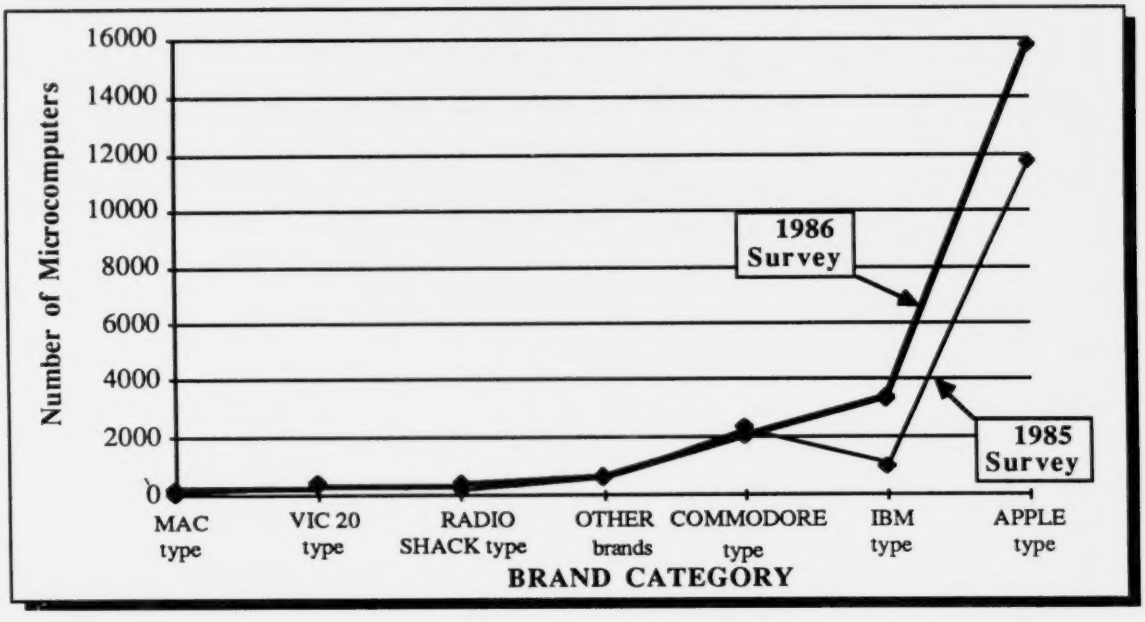
TABLE 3

Number of Microcomputers Reported in Alberta Schools - January 1986 *(January 1985 in italics)*

BRAND CATEGORY	NUMBER (1,345 sch.)	PROJECTION (1,489 sch.)	% OF MARKET
APPLE type	14,244	15,769	69.3%
APPLE type - 1985	*9,889*	*11,741*	*72.0%*
MAC type	197	218	1.0%
MAC type - 1985	*47*	*56*	*0.3%*
COMMODORE type	1,905	2,109	9.3%
COMMODORE type - 1985	*1,979*	*2,350*	*14.4%*
VIC 20 type	259	287	1.2%
VIC 20 type - 1985	*292*	*347*	*2.1%*
IBM type	3,116	3,450	15.2%
IBM type - 1985	*869*	*1,032*	*6.3%*
RADIO SHACK type	310	343	1.5%
RADIO SHACK type - 1985	*170*	*202*	*1.2%*
OTHER BRANDS	520	576	2.5%
OTHER BRANDS - 1985	*502*	*596*	*3.7%*
TOTAL	**20,551**	**22,752**	**100.0%**
Total - 1985	***13,748***	***16,324***	***100.0%***

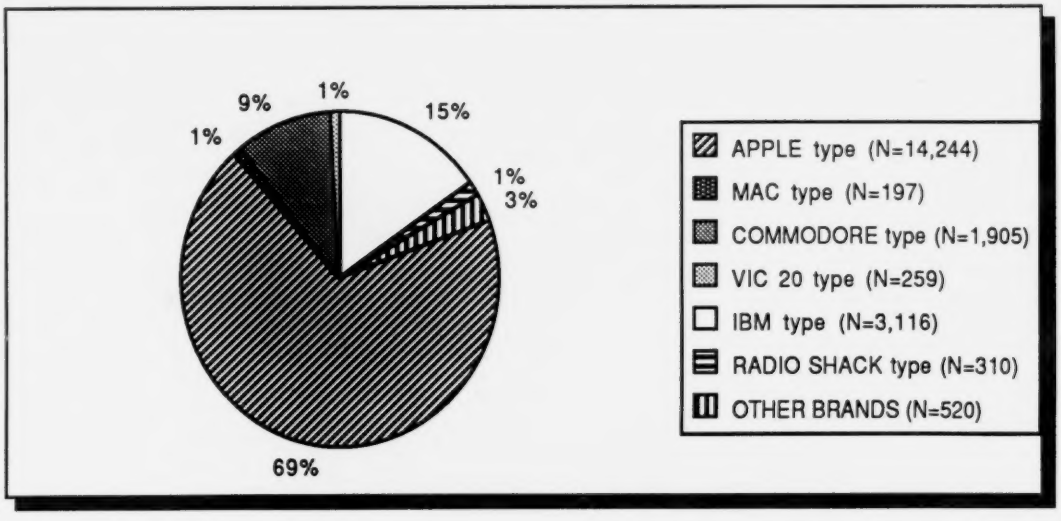
GRAPH 4

Microcomputers in Alberta Schools by Brand Category
1985 and 1986



GRAPH 5

Number of Microcomputers Reported
in Alberta Schools - January 1986



The data presented in Table 3 suggest a number of trends. First, it is clear that APPLE type microcomputers continue to dominate (69.3%) in Alberta schools, although the proportion of APPLE type computers has declined slightly (0.7% in twelve months). It is unlikely that this decline is significant, in view of the fact that the projected total installed base of APPLE type microcomputers in Alberta is so large (15,769 on January 1, 1986). While the number of Macintosh type microcomputers in Alberta schools is still relatively small (218), the rate of increase in the number of Macintosh computers was 289% in a twelve month period. This is the largest rate of increase observed across all brand categories and probably suggests that educators are beginning to see a niche in education for the Macintosh which offers a different kind of approach to computer use. Both the Commodore PET type of microcomputer and the Commodore VIC 20 type of microcomputer appear to have actually declined in number. The number of Commodore PET microcomputers has decreased by 11.4% while its proportion of the market in Alberta schools has declined from 14.4% to 9.3% in twelve months. Similarly, the number of Commodore VIC 20 microcomputers in Alberta schools has declined by 20.9% to 287 in a twelve month period. This seems to suggest that not only have the schools stopped buying these products, they may actually be disposing of the ones that they had. The proportion of IBM type microcomputers in Alberta schools has increased dramatically, from 1,032 to 3,450 in twelve months. This represents an increase of 234% in twelve months to a point where IBM type microcomputers represent 15.2% of the installed base in Alberta schools. Both the quantity and the rapid increase in the proportion of the installed base of IBM type microcomputers suggests that IBM type microcomputers are becoming a significant force in Alberta schools. Radio Shack type

microcomputers continue to exhibit modest growth (70.0% in a twelve month period) but their relatively small installed base of 343 microcomputers (1.5%) suggests that Radio Shack type microcomputers are unlikely to become a strong factor in Alberta schools. Finally, there is a small number (576) of "other" brands of microcomputers in Alberta schools. While this number is modest, and only represents 2.5% of the installed base in Alberta schools, it is very important, because it suggests that while educators in Alberta appear to have committed themselves to a "dual standard" (APPLE type and IBM type), they are always looking for other alternatives. It is this kind of experimentation with "others" that will allow educators to identify new options in instructional computing as the technology develops.

One aspect of this survey asked respondents to look ahead to the end of the current fiscal year and to estimate the number of ADDITIONAL microcomputers they were planning to buy during this period. While some schools added a precautionary note to their estimates, indicating that any projections they made would be subject to the availability of funds, the results of this aspect of the survey indicated that Alberta schools are planning to increase the installed base of microcomputers during the coming fiscal year. The results of this aspect of the survey indicated that schools might increase the installed base by approximately 18% to nearly 27,000 machines. Table 4 shows a detailed breakdown of the reported purchasing plans of schools for the current fiscal year. Quantities indicated in italics denote the quantities reported in 1985 and are shown for comparison purposes only.

TABLE 4

Number of Additional Microcomputers
Planned for 1986 Fiscal Year *(1985 figures in italics)*

BRAND CATEGORY	NUMBER (1,345 sch.)	PROJECTION (1,489 sch.)	% MARKET
APPLE type	2,086	2,309	54.9%
APPLE type - 1985	*4,742*	*5,630*	*69.1%*
MAC type	92	102	2.4%
MAC type - 1985	*47*	*56*	*0.7%*
COMMODORE type	74	82	2.0%
COMMODORE type - 1985	*355*	*421*	*5.2%*
VIC 20 type	0	0	0%
VIC 20 type - 1985	*44*	*52*	*0.6%*
IBM type	1,418	1,570	37.4%
IBM type -1985	*1,470*	*1,745*	*21.4%*
RADIO SHACK type	69	76	1.8%
RADIO SHACK type - 1985	*25*	*30*	*0.4%*
OTHER BRANDS	58	64	1.5%
OTHER BRANDS - 1985	*176*	*209*	*2.6%*
TOTAL	**3,797**	**4,203**	**100.0%**
TOTAL - 1985	***6,859***	***8,143***	***100.0%***

Based on the findings presented in Table 4, it would appear that the largest number of microcomputers that will be purchased during 1986 will likely be APPLE type (2,309). However, it would appear that the relative proportion of APPLE type microcomputers purchased may decrease from nearly 70% estimated one year ago to 54.9%. This decrease appears to be partly due to a gradual shift by the schools towards other types of microcomputers and partly due to a general decrease in buying expectations (projected purchases of 4,203 compared to 8,143 projected one year earlier).

Macintosh type microcomputers continue to show a significant increase in popularity, gaining 2.4% of the projected purchases for the current fiscal year. This tends to reinforce an earlier observation that perhaps educators are beginning to see a niche in education for the Macintosh which offers a different kind of approach to computing. IBM type microcomputers show a slight decline in terms of units (a 10.0% decrease from 1985 projections), however, the increase in proportion of the market to 37.4% is an indication that IBM type microcomputers will continue to grow in popularity in Alberta schools during 1986. Commodore products, Radio Shack products and "others" appear to have only token representation in the projections for 1986.

Respondents were asked to indicate what they believed would be the "ideal" number of microcomputers for their institutions. Only 1,010 respondents completed this portion of the survey and their responses indicated that the total ideal number of microcomputers for Alberta schools was 24,896. When this result is projected to the total population, the results indicate that the total ideal number of microcomputers for all schools in Alberta is 36,783. Table 5 presents a summary of respondents' opinions with respect to the "ideal" number of microcomputers in Alberta schools by brand category. Quantities indicated in italics denote the quantities reported in schools on January 1, 1986 and are shown for comparison purposes only. Graph 6 shows a comparison of the number of microcomputers reported in all schools on January 1, 1986 and the ideal number of microcomputers required for all schools by brand category.

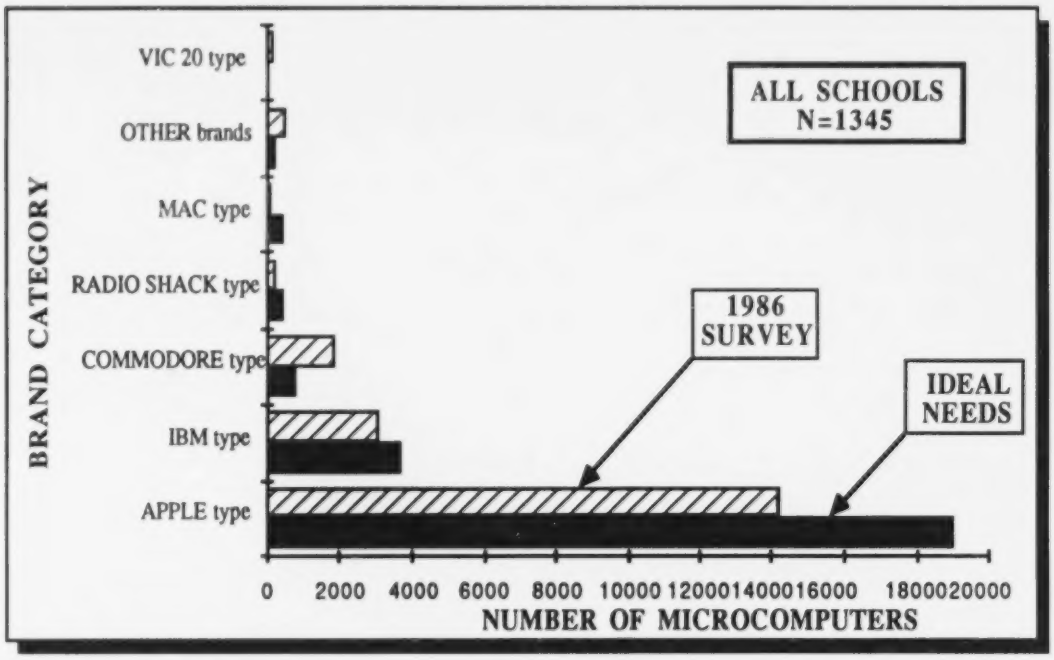
TABLE 5

Ideal Number of Microcomputers Required
in Alberta Schools - January 1986
(Actual Number - January 1986 in Italics)

BRAND CATEGORY	NUMBER (1,010 sch.)	PROJECTION (1,489 sch.)	% OF MARKET
APPLE type	19,071	28,116	76.6%
APPLE type - 1986	*14,244*	*15,769*	*69.3%*
MAC type	470	693	1.9%
MAC type - 1986	*197*	*218*	*1.0%*
COMMODORE type	801	1,181	3.2%
COMM. type - 1986	*1,905*	*2,109*	*9.3%*
VIC 20 type	74	109	0.3%
VIC 20 type - 1986	*259*	*287*	*1.2%*
IBM type	3,722	5,487	15.0%
IBM type - 1986	*3,116*	*3,450*	*15.2%*
RADIO SHACK type	475	780	1.9%
RADIO SH. type - 1986	*310*	*343*	*1.5%*
OTHER BRANDS	283	417	1.1%
OTHER BRANDS - 1986	*520*	*576*	*2.5%*
TOTAL	**24,896**	**36,783**	**100.0%**
TOTAL	***20,551***	***22,752***	***100.0%***

GRAPH 6

Comparison of Actual (January 1, 1986) and Ideal Number of Microcomputers in All Schools by Brand Category



The results presented in Table 5 suggest that, ideally, schools would like to have more Apple type microcomputers. According to the findings presented in Tables 3 and 4, it is expected that the total number of APPLE type microcomputers in Alberta schools by the end of the current fiscal year will be 26,955. This is approximately 10,000 less than the "ideal" number of APPLE type microcomputers. In all other cases there are only small differences between the number of microcomputers schools expect to have by the end of 1986 and the "ideal" number reported in Table 5.

Table 6 presents a summary of the results of four previous surveys as reported in The Report of the Minister's Task Force on Computers in Schools. Graph 7 is a representation of these results along with the results of this survey and the results of the projections for the next fiscal year. The most significant observation that can be made from this data is that the growth curve is still rising rapidly but that the rate at which it is rising has begun to diminish.

TABLE 6

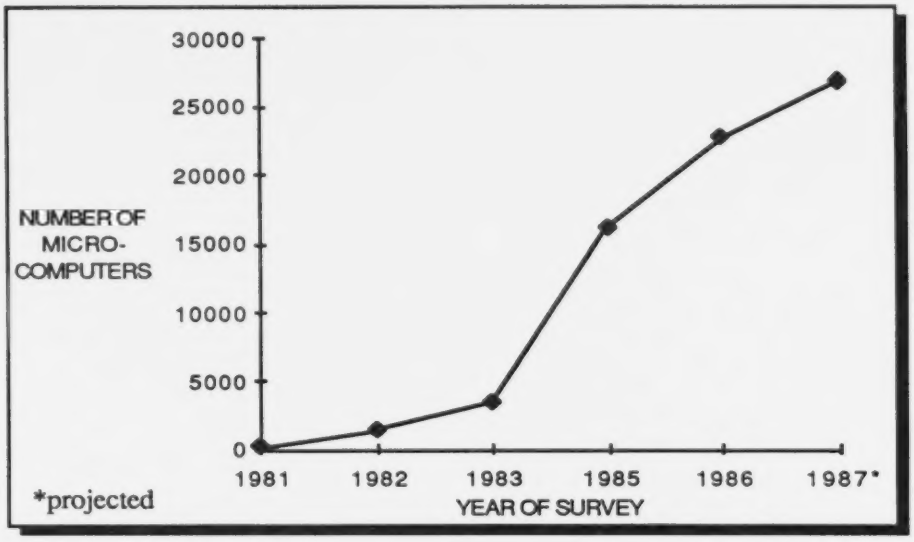
Microcomputers in Alberta Schools
1981-1986 With a Projection to 1987

YEAR	NUMBER OF MICROCOMPUTERS
January 1981	256
April 1982	1,525
March 1983	3,535
January 1985	16,324
January 1986	22,752
1987 (projected)	26,955

The ratio of students to microcomputers in Alberta schools, based on the 1,345 schools that responded to the survey, was found to be 20.3:1. Should the schools be successful in expanding the installed base of microcomputers in Alberta schools during the next fiscal year as projected in this survey, that ratio would drop to 17.1:1.

GRAPH 7

Microcomputers in Alberta Schools
1981-1986 With a Projection to 1987



Of the 1,345 schools that completed survey forms, 1,254 or 93.2% reported having one or more microcomputers in the school, while 91 schools (6.8%) had no microcomputers at all. The subset of respondents that reported having no microcomputers were analyzed and it was found that 65 of the 91 schools in this category (71.4%) were one-room schools with enrolments varying from 2 to 37 students. Furthermore, it was found that the total number of students attending these 91 schools was 4,000. This means that of 417,361 students attending the schools that participated in this survey, only 4,000 (0.96%) attend schools that do not have any microcomputers.

The average number of microcomputers per school in Alberta is 15.3. The average number of microcomputers per teacher is 1.2.

E. Location of Microcomputers - All Schools

The next section of the survey sought to determine where, within the school building, microcomputers were typically housed. Seven distinct areas of the school were identified and respondents were asked to indicate the number of microcomputers housed in each of the seven areas. An eighth category ("OTHER LOCATION") was added to provide for those cases that did not appear to be included in the other seven areas. While most respondents completed this portion of the survey, in some cases the total number of microcomputers accounted for in this portion of the survey did not agree with the number specified in a previous portion of the survey (in which respondents were asked to indicate the number of microcomputers located in the school by brand category). As a result, there is a small difference (1.6%) between the totals reported in these two portions of the survey. The results of this portion of the survey are summarized in Table 7. Quantities indicated in italics denote the quantities reported in 1985 and are shown for comparison purposes only. Graph 8 depicts the number of microcomputers housed in each of the areas on January 1, 1986 together with the number of elementary schools reporting microcomputers in each of the areas.

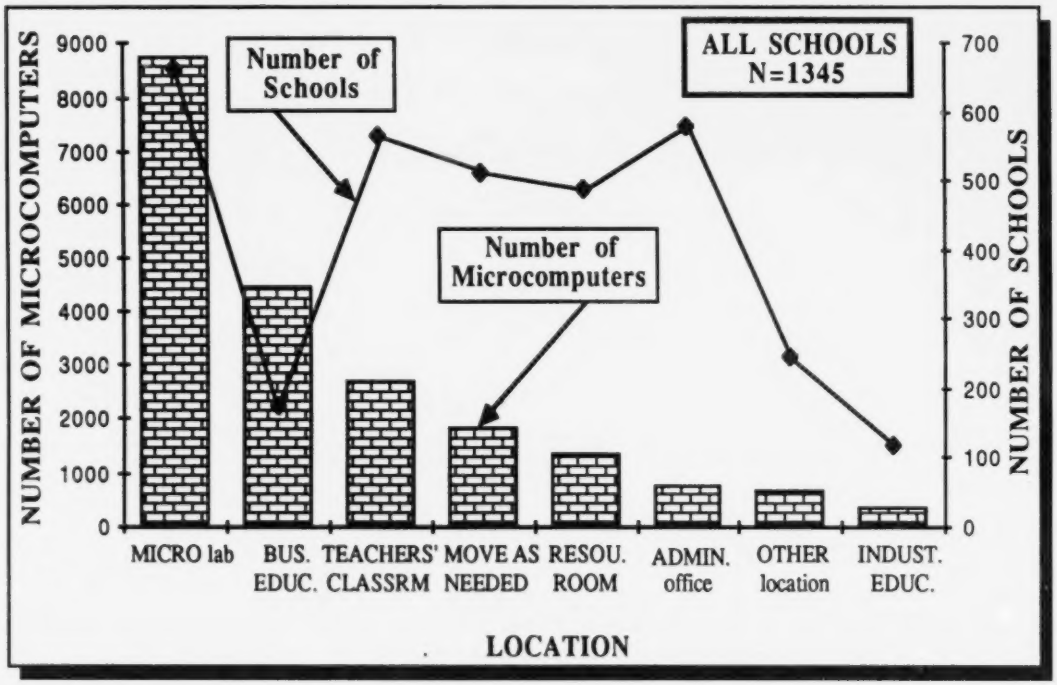
TABLE 7

Location of Microcomputers in the Schools
(*1985 Locations Shown in Italics*)

LOCATION	NUMBER OF SCHOOLS	NUMBER OF MICROCOMPUTERS
MICRO LAB.	661 (49.2%)	8,769 (42.7%)
MICRO LAB. -1985	*516(40.6%)*	*5,830 (42.4%)*
RESOURCE ROOM	487 (36.2%)	1,336 (6.5%)
RESOURCE ROOM - 1985	*360 (28.3%)*	*878 (6.4%)*
ADMIN. OFFICE	579 (43.1%)	751 (3.6%)
ADMIN. OFFICE - 1985	*390 (30.7%)*	*468 (3.4%)*
TEACHERS' CLASSROOMS	564 (41.9%)	2,702 (13.1%)
TEACHERS' CLASSROOMS - 1985	*435 (34.2%)*	*1,835 (13.4%)*
MOVE AS NEEDED	512 (38.1%)	1,836 (8.9%)
MOVE AS NEEDED - 1985	*496 (39.0%)*	*1,592 (11.6%)*
INDUSTRIAL EDUC. LAB	119 (8.9%)	361 (1.8%)
INDUSTRIAL EDUC. LAB. - 1985	*79 (6.2%)*	*232 (1.7%)*
BUSINESS EDUC.	176 (13.1%)	4,477 (21.8%)
BUSINESS EDUCATION- 1985	*128 (10.1%)*	*2,369 (17.2%)*
OTHER LOCATION	246 (18.3%)	676 (3.3%)
OTHER LOCATION - 1985	*155 (12.2%)*	*457 (3.3%)*
UNACCOUNTED FOR		-357 (-1.7%)
UNACCOUNTED FOR - 1985		*87 (0.6%)*
TOTAL		**20,551(100%)**
TOTAL - 1985		***13,748 (100%)***

GRAPH 8

Location of Microcomputers in Alberta Schools



The largest proportion of microcomputers (42.7%) seem to be located in microcomputer laboratories. From the data in Table 7, one can determine that the average microcomputer laboratory contains just over 13 microcomputers. While there have been increases in the number of microcomputers in all categories, the proportionate distribution in most categories has remained largely unchanged, with the exceptions of the "business education" category and the "move as needed" category. The "business education" category has increased by just over 4 % while the "move as needed" category has decreased by approximately 3%.

Some respondents reported difficulty with this portion of the survey because in many schools microcomputers are put to multiple use. For example, the microcomputer laboratory might be used on some occasions for teaching business education courses or, conversely, a business education laboratory might occasionally be used as a microcomputer laboratory.

While the lowest proportion of schools reported having microcomputers within industrial education and business education, this finding may be somewhat misleading because these subject areas are not taught in elementary schools. It is interesting to note, however, that even though only 13.1% of the schools reported having microcomputers in business education, 21.8% of the microcomputers in Alberta are located in business education laboratories. The average number of microcomputers per laboratory in business education is 25.4.

Respondents were also asked to indicate the planned physical location of the additional microcomputers they planned to purchase during the next fiscal year. Table 8 presents the findings of this portion of the survey. Quantities indicated in italics represent the total number of microcomputers available at each physical location on January 1, 1986 and are included for comparison purposes only.

TABLE 8

Planned Location of Microcomputers to be Purchased During 1986
(January 1986 Figures Shown in Italics)

LOCATION	NUMBER OF SCHOOLS	NUMBER OF MICROCOMPUTERS
MICRO LAB.	223 (16.6%)	1,195 (31.5%)
MICRO LAB. -1986	*661 (49.2%)*	*8,769 (42.7%)*
RESOURCE ROOM	107 (8.0%)	233 (6.1%)
RESOURCE ROOM - 1986	*487 (36.2%)*	*1,336(6.5%)*
ADMIN. OFFICE	106 (7.9%)	154 (4.1%)
ADMIN. OFFICE - 1986	*579 (43.1%)*	*751 (3.6%)*
TEACHERS' CLASSROOMS	128 (9.5%)	450 (11.8%)
TEACHERS' CLASSROOMS - 1986	*564 (41.9%)*	*2,702 (13.1%)*
MOVE AS NEEDED	118 (8.8%)	302 (8.0%)
MOVE AS NEEDED - 1986	*512 (38.1%)*	*1,836 (8.9%)*
INDUSTRIAL EDUC. LAB	12 (0.9%)	37 (1.0%)
INDUSTRIAL EDUC. LAB - 1986	*119 (8.9%)*	*361 (1.8%)*
BUSINESS EDUC.	81 (6.0%)	1,315 (34.6%)
BUSINESS EDUCATION- 1986	*176 (13.1%)*	*4,477 (21.8%)*
OTHER LOCATION	27 (2.0%)	55 (1.4%)
OTHER LOCATION - 1986	*246 (18.3%)*	*676 (3.3%)*
UNACCOUNTED FOR		56 (1.5%)
UNACCOUNTED FOR - 1986		*-357 (-1.7%)*
TOTAL		**3,797(100%)**
TOTAL - 1986		***20,551(100%)***

Respondents were also asked to indicate the ideal numbers of microcomputers in each of the physical locations. The results of these responses are presented in Table 9. Graph 9 illustrates the comparison between

the actual number of microcomputers reported in all schools on January 1, 1986 and the ideal number of microcomputers required in all schools. They indicate that, ideally, the largest proportion of microcomputers (42.0%) should be located in a general purpose microcomputer laboratory while the second largest proportion (17.7%) should be located in teachers' classrooms.

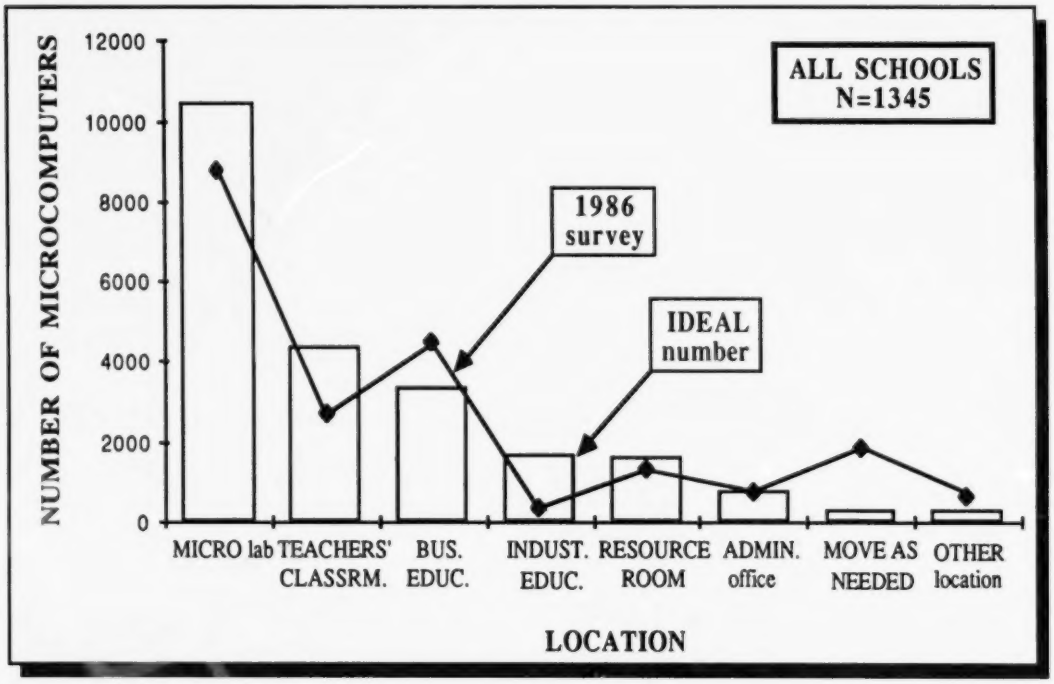
TABLE 9

Ideal Location of Microcomputers in Alberta Schools
(January 1986 Figures Shown in Italics)

LOCATION	NUMBER OF SCHOOLS	NUMBER OF MICROCOMPUTERS
MICRO LAB.	223 (16.6%)	10,468 (42.0%)
MICRO LAB. -1986	*661 (49.2%)*	*8,769 (42.7%)*
RESOURCE ROOM	107 (8.0%)	1,582 (6.4%)
RESOURCE ROOM - 1986	*487 (36.2%)*	*1,336 (6.5%)*
ADMIN. OFFICE	106 (7.9%)	769 (3.1%)
ADMIN. OFFICE - 1986	*579 (43.1%)*	*751 (3.6%)*
TEACHERS' CLASSROOMS	128 (9.5%)	4,405 (17.7%)
TEACHERS' CLASSROOMS - 1986	*564 (41.9%)*	*2,702 (13.1%)*
MOVE AS NEEDED	118 (8.8%)	1,662 (6.7%)
MOVE AS NEEDED - 1986	*512 (38.1%)*	*1,836 (8.9%)*
INDUSTRIAL EDUC. LAB	12 (0.9%)	376 (1.5%)
INDUSTRIAL EDUC. LAB. - 1986	*119 (8.9%)*	*361 (1.8%)*
BUSINESS EDUC.	81 (6.0%)	3,337 (13.4%)
BUSINESS EDUCATION- 1986	*176 (13.1%)*	*4,477 (21.8%)*
OTHER LOCATION	27 (2.0%)	405 (1.6%)
OTHER LOCATION - 1986	*246 (18.3%)*	*676 (3.3%)*
UNACCOUNTED FOR		1,892 (7.6%)
UNACCOUNTED FOR - 1986		*-357 (-1.7%)*
TOTAL		**24,896 (100%)**
TOTAL - 1986		***20,551 (100%)***

GRAPH 9

Comparison of Actual (January 1, 1986) and Ideal Number of Microcomputers in Elementary Schools by Location



F. Specially Equipped Microcomputers - All Schools

As microcomputers have become more sophisticated and more powerful, it has become easier to adapt them for use in a variety of special applications. One such application involves the use of microcomputers for French language instruction. Respondents were asked to report the number of microcomputers they had in the school which had been specially equipped to generate French characters. A total of 120 of the 1,345 schools surveyed (8.9%) indicated that they had one or more microcomputers specially equipped to generate French characters. The total number of microcomputers equipped

in this manner was 760 (3.7% of the total installed base of microcomputers reported in this survey). A total of 85 of the 1,345 respondents (6.3%) indicated that they were planning to equip microcomputers to generate French characters during the current fiscal year. The number of microcomputers specially equipped with French characters which would be added in the current fiscal year was reported to be 436 (11.5% of the microcomputers planned for the current fiscal year). Respondents were asked to indicate what they believed to be the ideal number of microcomputers specially equipped with French characters for their school. A total of 289 of the 1,345 schools surveyed (21.5%) indicated that, ideally, they should have one or more microcomputers specially equipped to generate French characters and, ideally, they indicated that the total number of microcomputers that should be so equipped was 2,403 (9.7% of the ideal number of microcomputers reported). The responses to questions involving microcomputers specially equipped to generate French characters are summarized in Table 10.

TABLE 10

Microcomputers Specially Equipped to Generate French Characters

	NUMBER OF SCHOOLS	NUMBER OF COMPUTERS
Installed as of January 1, 1986	120 (8.9%)	760 (3.7%)
Number to be added this fiscal year	85 (6.3%)	436 (11.5%)
Total installed at end of this fiscal year	205 (15.2%)	1,196 (4.9%)
Ideal number	289 (21.5%)	2,403 (9.7%)

Respondents were also asked to report the number of microcomputers they had in the school which had been specially equipped for use by physically disadvantaged students. A total of 45 of the 1,345 schools surveyed (3.3%) indicated that they had one or more microcomputers specially equipped for use by physically disadvantaged students. The total number of microcomputers equipped in this manner was 53 (0.3% of the total installed base of microcomputers reported in this survey). A total of 9 of the 1,345 respondents (0.7%) indicated that they were planning to equip microcomputers for use by physically disadvantaged students during the current fiscal year. The number of microcomputers specially equipped for use by physically disadvantaged students which would be added in the current fiscal year was reported to be 10 (0.3% of the microcomputers planned for the current fiscal year). Respondents were asked to indicate what they believed to be the ideal number of microcomputers specially equipped for use by physically disadvantaged students for their school. A total of 224 of the 1,345 schools surveyed(16.7%) indicated that, ideally, they should have one or more microcomputers specially equipped for use by physically disadvantaged students and, ideally, they indicated that the total number of microcomputers that should be so equipped was 400 (1.6% of the ideal number of microcomputers reported). The responses to questions involving microcomputers specially equipped for use by physically disadvantaged students are summarized in Table 11.

TABLE 11

Microcomputers Specially Equipped for Use by Physically Disadvantaged Students

	NUMBER OF SCHOOLS	NUMBER OF COMPUTERS
Installed as of January 1, 1986	45 (3.3%)	53 (0.3%)
Number to be added this fiscal year	9 (0.7%)	10 (0.3%)
Total installed at end of this fiscal year	54 (4.0%)	63 (0.3%)
Ideal number	224 (16.7%)	400 (1.6%)

G. Microcomputer Maintenance - All Schools

As the number of microcomputers in schools increases, and particularly as teachers begin to integrate microcomputers into their instruction, the problem of maintenance must be faced. Respondents were asked to indicate how they were currently handling microcomputer maintenance in their school. A total of 511 of the 1,345 respondents (38.0%) indicated that maintenance was performed by a maintenance person at central office. It was interesting to note that more than 10% of the respondents indicated that maintenance was either performed by a teacher (6.3% of all respondents) or by the computer coordinator (4.5% of all respondents). A summary of responses to the question of microcomputer maintenance is presented in Table 12.

TABLE 12

Microcomputer Maintenance

	NUMBER OF SCHOOLS	PERCENTAGE
Teacher	84	6.3%
Computer Coordinator	61	4.5%
Central Office Maintenance Person	511	38.0%
Local Commercial Shop	143	10.6%
Commercial Shop in Another City	292	21.7%
Other	41	3.1%
No Response	213	15.8%
TOTAL	**1345**	**100.0%**

H. Access To Microcomputers - All Schools

As both students and teachers become increasingly computer literate, they will need to have access to microcomputers in order to derive the benefits of the technology that they have learned to use. Respondents were asked to indicate the extent to which both students and teachers in their school had access to microcomputers in the school beyond normal class times. The results indicated that in 802 of the 1,345 schools surveyed (59.6%), students have limited access to the microcomputers beyond normal class times, while in 84 schools (6.3%), students have no access to the microcomputers beyond normal class time. A total of 832 respondents (61.9%) indicated that teachers have easy access to the microcomputers beyond normal class time. The findings with respect to access to the microcomputers in the school are summarized in Table 13.

TABLE 13

Access to Microcomputers
Outside of Normal Class Time

	BY STUDENTS	BY TEACHERS
Easy access	331 (24.6%)	832 (61.9%)
Limited access	802 (59.6%)	359 (26.7%)
No access	84 (6.3%)	18 (1.3%)
No response	128 (9.5%)	136 (10.1%)
TOTAL	**1,345 (100.0%)**	**1,345 (100.0%)**

I. Keyboarding - All Schools

As the amount of use that students make of microcomputers begins to increase, it becomes apparent that one way of improving the productivity of students as well as the productivity of the microcomputer facilities is to provide students with keyboarding skills that will permit them to make more efficient use of the microcomputers during the time that they have access to them. Respondents were asked to indicate what emphasis they are now placing on keyboarding in their school by specifying the proportion of students in the school who are now taking one or more courses in keyboarding. The results indicated that in 610 schools (45.3%) less than one fifth of the students take a course in keyboarding. In 73 of the 1,345 schools surveyed (5.4%), more than four fifths of the students take one or more courses in keyboarding. The findings with respect to the extent to which keyboarding is now being taught are summarized in Table 14.

TABLE 14

Extent to Which Keyboarding Courses
are Presently Being Taught

STUDENTS TAKING KEYBOARDING COURSES	NUMBER OF SCHOOLS	PERCENTAGE
less than one fifth	610	45.3%
between one fifth and two fifths	305	22.7%
between two fifths and three fifths	152	11.3%
between three fifths and four fifths	40	3.0%
more than four fifths	73	5.4%
no response	165	12.3%
TOTAL	**1,345**	**100.0%**

Respondents were also asked to indicate what emphasis they will place on keyboarding in their school during the next year by specifying the proportion of students in the school who will be taking one or more courses in keyboarding at that time. The results indicated that in 386 of the 1,345 schools surveyed (28.7%) less than one fifth of the students will be taking a course in keyboarding next year. In 99 schools (7.4%), more than four fifths of the students will take one or more courses in keyboarding next year. The findings with respect to the extent to which keyboarding will be taught next year are summarized in Table 15.

TABLE 15

Extent to Which Keyboarding Courses
Will Be Taught Next Year

STUDENTS TAKING KEYBOARDING COURSES	NUMBER OF SCHOOLS	PERCENTAGE
less than one fifth	386	28.7%
between one fifth and two fifths	366	27.2%
between two fifths and three fifths	216	16.1%
between three fifths and four fifths	88	6.5%
more than four fifths	99	7.4%
no response	190	14.1%
TOTAL	**1,345**	**100.0%**

Respondents were asked to indicate what emphasis they would place on keyboarding in their school in an ideal situation by specifying the proportion of students in the school who should be taking one or more courses in keyboarding. The results indicated that in 450 of the 1,345 schools surveyed (33.5%) more than four fifths of the students should take one or more courses in keyboarding. The findings with respect to the extent to which keyboarding should be taught in an ideal situation are summarized in Table 16.

TABLE 16

Extent to Which Keyboarding Courses
Should Be Taught in an Ideal Situation

STUDENTS TAKING KEYBOARDING COURSES	NUMBER OF SCHOOLS	PERCENTAGE
less than one fifth	99	7.4%
between one fifth and two fifths	183	13.6%
between two fifths and three fifths	236	17.6%
between three fifths and four fifths	195	14.5%
more than four fifths	450	33.5%
no response	182	13.5%
TOTAL	**1,345**	**100.0%**

J. Administrative Uses of Microcomputers - All Schools

Just over forty-three percent of the schools reported having one or more microcomputers in the school administration office. In the next portion of the survey, respondents were asked to indicate the kinds of administrative software that was being used in the school. A summary of the results of this portion of the survey is presented in Table 17.

TABLE 17

Use of Microcomputers for Administrative Tasks

TYPE OF USE	NUMBER OF SCHOOLS
INTEGRATED SOFTWARE	366 (27.2%)
WORD PROCESSING SOFTWARE	561 (41.7%)
SPREADSHEET SOFTWARE	286 (21.3%)
DATA BASE MANAGEMENT SOFTWARE	290 (21.6%)
COMMUNICATIONS SOFTWARE	111 (8.3%)
SCHOOL SCHEDULING SOFTWARE	73 (5.4%)
GRADE/ATTENDANCE RECORDING	259 (19.3%)
SCHOOL ACCOUNTING	164 (12.2%)
SCHOOL TIMETABLING	74 (5.5%)
SCHOOL BUS SCHEDULING	23 (1.7%)

The administrative task for which most schools have begun using microcomputers is word processing. Almost every school (96.9%) that is using microcomputers for administrative purposes is using word processing software.

Respondents were also asked to indicate which administrative software packages they expected to be using next year, and which software packages they "should" be using. Most respondents (50.7%) indicated that they expected to be using word processing software for administrative purposes next year. The greatest proportion of respondents (65.0%) indicated that they

"should" be using word processing software. The summary of responses to these questions is presented in Table 18.

TABLE 18

Expected Use of Software for Administrative Tasks Next Year and Perception of Software That Should Be Used for Administrative Tasks

TYPE OF USE	NUMBER OF SCHOOLS will use	should use
INTEGRATED SOFTWARE	471 (35.0%)	649 (48.3%)
WORD PROCESSING SOFTWARE	682 (50.7%)	874 (65.0%)
SPREADSHEET SOFTWARE	417 (31.0%)	591 (43.9%)
DATA BASE MANAGEMENT SOFTWARE	390 (29.0%)	554 (41.2%)
COMMUNICATIONS SOFTWARE	182 (13.5%)	419 (31.2%)
SCHOOL SCHEDULING SOFTWARE	136 (10.1%)	378 (28.1%)
GRADE/ATTENDANCE RECORDING	399 (29.7%)	679 (50.5%)
SCHOOL ACCOUNTING	293 (21.8%)	611 (45.4%)
SCHOOL TIMETABLING	145 (10.8%)	431 (32.0%)
SCHOOL BUS SCHEDULING	40 (3.0%)	123 (9.1%)

K. Microcomputer-Related Training for Teachers - All Schools

The survey included a number of items dealing with teacher training as it relates to the use of microcomputers. First, respondents were asked to estimate the proportion of their staff who had received training in the use of microcomputers in education as a result of various options. The type of training that was made available to most staff was participation in school

workshops. The type of training that was made available to the least staff was training that was the result of three or more university or college courses. Table 19 shows the various types of training considered and the proportion of responses to each.

TABLE 19

Staff Training in the Use of Microcomputers - All Schools

TYPE OF TRAINING	NUMBER OF SCHOOLS IN WHICH MOST teachers trained by	SOME teachers trained by	NO teachers trained by
SCHOOL WORKSHOPS	595 (44.2%)	503 (37.4%)	79 (5.9%)
DISTRICT-SPONSORED WORKSHOPS	290 (21.6%)	810 (60.2%)	79 (5.9%)
ONE UNIVERSITY OR COLLEGE COURSE	26 (1.9%)	921 (68.5%)	156 (11.6%)
TWO UNIVERSITY OR COLLEGE COURSES	7 (0.5%)	570 (42.4%)	393 (29.2%)
THREE OR MORE UNIV. OR COLLEGE COURSES	3 (0.2%)	294 (21.9%)	617 (45.9%)
OTHER FORMAL TRAINING	12 (0.9%)	220 (16.4%)	426 (31.7%)
SELF-TAUGHT	158 (11.7%)	884 (65.7%)	61 (4.5%)

Respondents were asked to indicate what additional training their staff needed in the field of microcomputing. The results indicated that the greatest need for additional training was in the use of productivity software and integration of computers into the curriculum.

TABLE 20

Additional Training Needs
in the Use of Microcomputers - All Schools

TYPE OF TRAINING	NUMBER OF SCHOOLS IN WHICH MOST teachers need	SOME teachers need	NO teachers need
INTRODUCTORY COMPUTER LITERACY	320 (23.8%)	637 (47.4%)	135 (10.0%)
USING PRODUCTIVITY SOFTWARE	687 (51.1%)	448 (33.3%)	24 (1.8%)
COMPUTER PROGRAMMING	247 (18.4%)	533 (39.6%)	250 (18.6%)
INTEGRATION OF COMPUTERS IN THE CURRICULUM	903 (67.1%)	304 (22.6%)	12 (0.9%)
OTHER	49 (3.6%)	21 (1.6%)	17 (1.3%)

Respondents were asked to indicate an opinion concerning the minimum amount of pre-service training needs of teachers in the field of computing. Most respondents (451, 33.5%) indicated that a minimum of one university or college course would be sufficient, while 279 (20.7%) indicated that a minimum of two university or college courses would be required. Less than ten percent (91, 6.8%) indicated that the minimum requirement was three or more university or college courses. An overwhelming 975 (72.5%) of the respondents indicated that they believed that pre-service teachers needed training in the integration of microcomputer uses in the "teaching methods" courses.

L. Buildings and Facilities - All Schools

The final section in the survey asked respondents to rate a series of statements that described potential problem areas related to school facilities for microcomputers. Each statement was rated in terms of three levels of importance, low, medium and high. The problem that was considered to be a high level problem by the greatest proportion of respondents was one that dealt with procuring and maintaining software. Table 21 presents a summary of the responses to all of the items in this portion of the survey.

TABLE 21

Problems Related to
Buildings and Facilities - All Schools

PROBLEM AREA	LEVEL OF IMPORTANCE LOW	MEDIUM	HIGH
Appropriate location for microcomputers	576 (42.8%)	334 (24.8%)	305 (22.7%)
Adequate access to microcomputers	386 (28.7%)	423 (31.4%)	410 (30.5%)
Appropriate spatial layout for microcomputer facility	596 (44.3%)	360 (26.8%)	240 (17.8%)
Adequate environmental conditions for microcomputers	512 (38.1%)	425 (31.6%)	263 (19.6%)
Adequate physical security for microcomputers	520 (38.7%)	373 (27.7%)	322 (23.9%)
Providing storage for micro-computer equipment & supplies	511 (38.0%)	447 (33.2%)	251 (18.7%)
Procuring adequately designed workstations	424 (31.5%)	463 (34.4%)	315 (23.4%)
Providing telecommunication links	697 (51.8%)	284 (21.1%)	214 (15.9%)
Providing display monitors for classroom demonstrations	443 (32.9%)	463 (34.4%)	301 (22.4%)
Meeting power requirements for microcomputers	691 (51.4%)	292 (21.7%)	217 (16.1%)
Maintaining microcomputers	341 (25.4%)	470 (34.9%)	401 (29.8%)
Procuring and maintaining software	120 (8.9%)	350 (26.0%)	751 (55.8%)
Other	9 (0.7%)	15 (1.1%)	96 (7.1%)

IV. FINDINGS - ELEMENTARY SCHOOLS

A. Description of Elementary Schools

The total number of elementary (category 1) schools surveyed was 580. The student population in these schools was 159,723 and the teacher population was 8,743.

B. Computer Coordinators - Elementary Schools

Elementary school respondents were asked to indicate whether their school had an individual who had been identified as the computer coordinator by providing his or her name and telephone number on the survey response form. A total of 467 of the 580 elementary school respondents (80.5%) provided the name of the computer coordinator in the school. This result is considerably higher than the corresponding result for all of the schools surveyed which was 77.2%.

C. Teachers Using Computers - Elementary Schools

Respondents in the elementary schools surveyed were asked to list the names of teachers in their school who, in their opinion, were making "extensive use" of computers in their classrooms. A total of 412 of the 580 elementary school respondents (71.0%) indicated that there was at least one teacher in the school who was making "extensive use" of computers in the classroom. This finding compares favourably with the corresponding result obtained for all schools surveyed which was 71.9%. The total number of

teachers in all elementary schools who were identified as making "extensive use" of computers in the classroom was 1,031 (11.8% of the teachers in the elementary schools surveyed). This finding is somewhat higher than the corresponding result obtained for all schools surveyed (9.9%) and is proportionately the highest of all six school categories surveyed.

D. Number of Microcomputers - Elementary Schools

The total number of microcomputers reported by the 580 elementary schools surveyed was 4,807. This is an increase of 1,501 (45.4%) compared to the number of microcomputers reported in January of 1985. This brings the ratio of students to microcomputers at the elementary level down to 33.2:1 from a ratio of 42.4:1 reported one year ago. Respondents in this category indicated that they were planning to purchase an additional 739 microcomputers during the next fiscal year. Should these purchases occur, then the total number of microcomputers at the elementary school level would increase to 5,546, bringing the ratio of students to microcomputers down to 28.8:1. The average number of microcomputers per elementary school is 8.3 compared to the average across all schools which is 15.3 per school. The average number of elementary teachers per microcomputer is 1.8:1 while the corresponding number across all schools is 1.2:1. Table 22 shows a complete breakdown of the number of microcomputers in elementary schools as well as the number of microcomputers that schools plan to purchase during the current year by brand category. Graph 10 shows a comparison of the number of microcomputers in elementary schools by brand category reported in two consecutive surveys, January 1, 1985 and January 1, 1986.

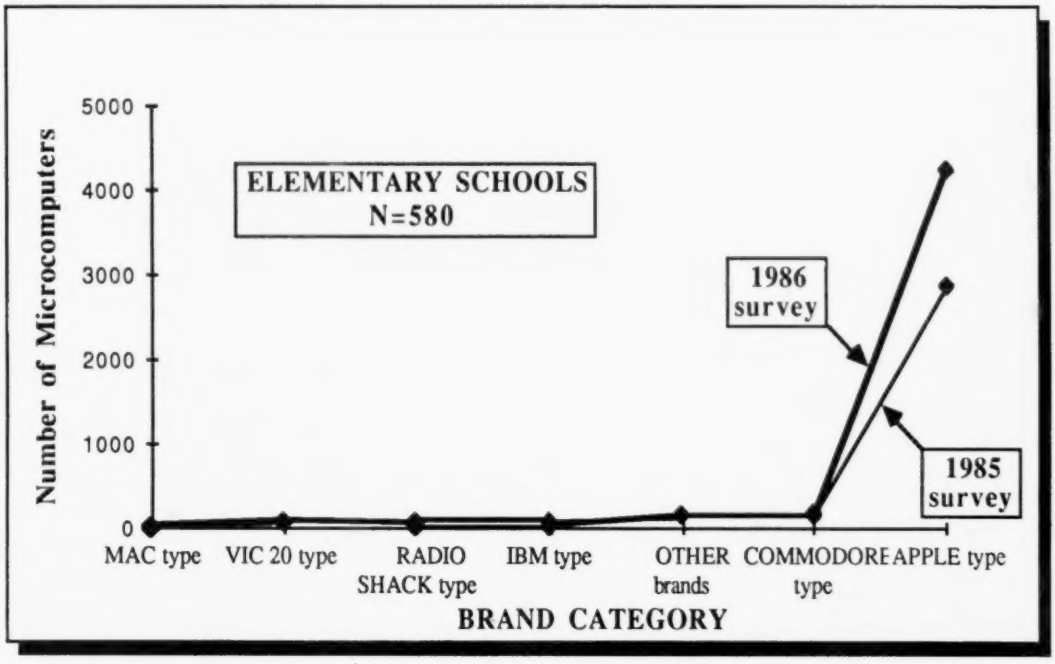
TABLE 22

Microcomputers in Elementary Schools by Brand Category
(1985 Findings Shown in Italics)

BRAND CATEGORY	NUMBER REPORTED	NUMBER PLANNED (NEXT FISCAL YEAR)
APPLE type	4,226 (87.9%)	616 (83.4%)
APPLE type - 1985	*2,860 (86.5%)*	*1,614 (93.6%)*
MAC type	11 (0.2%)	5 (0.7%)
MAC type -1985	*13 (0.4%)*	*16 (0.9%)*
COMMODORE type	163 (3.4%)	9 (1.2%)
COMMODORE type -1985	*135 (4.1%)*	*27 (0.6%)*
VIC 20 type	76 (1.6%)	0 (0%)
VIC 20 type -1985	*71 (2.1%)*	*7 (0.4%)*
IBM type	94 (2.0%)	35 (4.7%)
IBM type -1985	*38 (1.1%)*	*28 (1.6%)*
RADIO SHACK type	88 (1.8%)	53 (7.2%)
RADIO SHACK type -1985	*35 (1.1%)*	*1 (0.1%)*
OTHER BRANDS	149 (3.1%)	21 (2.8%)
OTHER BRANDS -1985	*154 (4.7%)*	*32 (1.8%)*
TOTAL	**4,807(100%)**	**739(100%)**
TOTAL-1985	***3,306(100%)***	***1,725(100%)***

GRAPH 10

Microcomputers in Elementary Schools by Brand Category
1985 and 1986



In a survey conducted one year ago, elementary school respondents were asked to estimate the number of microcomputers they expected to purchase during 1985. The total number estimated was 1,725 microcomputers. The actual number of microcomputers purchased during that period was 1,501 which meant that elementary school respondents overestimated their expected purchases by 14.9%.

Estimates made by elementary school respondents in this survey indicated that the number of microcomputers they expected to purchase during the current fiscal year (1986) was only 739 which is a drop of 57.2% from the

1985 estimate of 1,725 and a drop of 50.8% from the actual number of microcomputers purchased by elementary schools during the 1985 fiscal year.

Respondents were asked to indicate what they believed would be the "ideal" number of microcomputers for their institutions. Respondents indicated that, ideally, the total number of microcomputers required in elementary schools was 9,139. This is nearly double the 4,807 microcomputers that were reported in elementary schools on January 1, 1986. According to the responses to this part of the survey, respondents feel that the ideal ratio of students to microcomputers at the elementary level would be 17.5:1. Table 23 presents a summary of elementary school respondents' opinions concerning the "ideal" number of microcomputers in Alberta elementary schools by brand category. Graph 11 shows a comparison of the number of microcomputers reported in elementary schools on January 1, 1986 and the ideal number of microcomputers required for elementary schools by brand category.

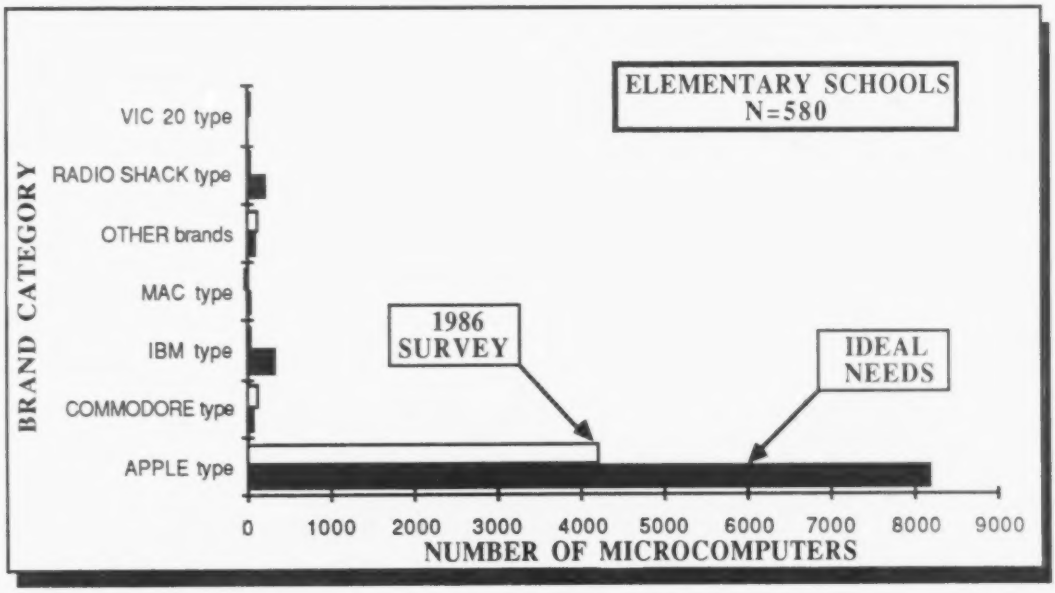
TABLE 23

Ideal Number of Microcomputers Required
in Elementary Schools

BRAND CATEGORY	NUMBER	% OF MARKET
APPLE type	8,205	89.8%
MAC type	61	0.7%
COMMODORE type	102	1.1%
VIC 20 type	34	0.4%
IBM type	363	4.0%
RADIO SHACK type	242	2.6%
OTHER BRANDS	132	1.4%
TOTAL	**9,139**	**100.0%**

GRAPH 11

Comparison of Actual (January 1, 1986) and Ideal Number of
Microcomputers in Elementary Schools by Brand Category



APPLE type microcomputers have dominated the elementary market and all indications are that they will continue to do so during the next fiscal year. Results indicated that 87.9% of all microcomputers in use at the elementary school level on January 1, 1986 were APPLE type. This is a slight increase over the results reported one year earlier which indicated that 86.5% of all microcomputers in use at the elementary school level were APPLE type. However, the results of that portion of the survey which dealt with estimated purchases during the current fiscal year indicated that the proportion of new APPLE type microcomputers purchased during the current fiscal year would drop to 83.4%, significantly lower than the corresponding estimate one year earlier (93.6%). However, respondents also indicated that 89.8% of the 9,139 microcomputers ideally required for the 580 elementary schools should be APPLE type.

Of the 580 schools that completed survey forms, 564 (97.2%) reported having one or more microcomputers in the school, while 16 schools (2.8%) had no microcomputers at all. This is slightly higher than the corresponding result for all schools in the province which was 93.2%. This means that of 159,723 students attending 580 elementary schools that participated in this survey, only 1,716 (1.1%) attended schools that did not have any microcomputers.

E. Location of Microcomputers - Elementary Schools

The next section of the survey sought to determine where microcomputers in elementary schools were typically housed. Seven distinct areas of the school were identified and respondents were asked to indicate the number of microcomputers housed in each of the seven areas. An eighth area

("OTHER LOCATION") was added to provide for those cases that did not appear to be included in the other seven areas. While most respondents completed this portion of the survey, in some cases the total number of microcomputers accounted for in this portion of the survey did not agree with the number specified in a previous portion of the survey (in which respondents were asked to indicate the number of microcomputers located in the school by brand category). As a result, there was a difference (7.3%) between the totals reported in these two portions of the survey. The results of this portion of the survey are summarized in Table 24. Quantities indicated in italics denote the quantities reported in 1985 and are shown for comparison purposes only. Graph 12 depicts the number of microcomputers housed in each of the areas on January 1, 1986 together with the number of elementary schools reporting microcomputers in each of the areas.

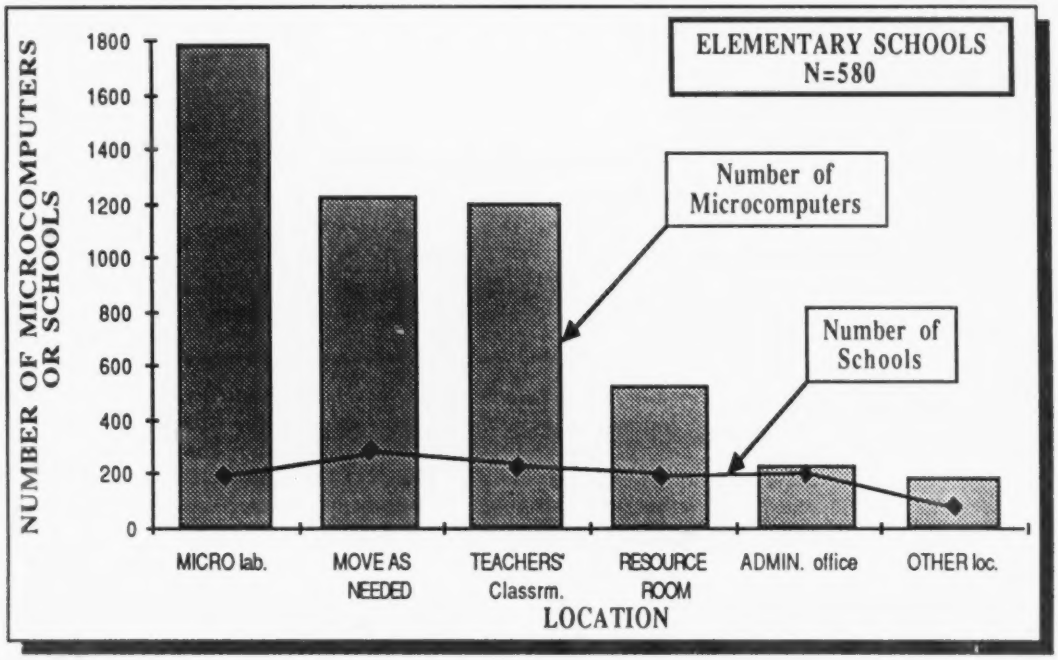
TABLE 24

Location of Microcomputers in Elementary Schools
(*1985 Quantities Shown in Italics*)

LOCATION	NUMBER OF SCHOOLS	NUMBER OF MICROCOMPUTERS
MICRO LAB.	197 (34.0%)	1,784 (37.1%)
MICRO LAB. -1985	*127 (22.5%)*	*883 (26.7%)*
RESOURCE ROOM	199 (34.3%)	527 (11.0%)
RESOURCE ROOM - 1985	*148 (26.2%)*	*340 (10.3%)*
ADMIN. OFFICE	208 (35.9%)	234 (4.9%)
ADMIN OFFICE - 1985	*138 (24.5%)*	*147 (4.4%)*
TEACHERS' CLASSROOMS	233 (40.2%)	1,197 (24.9%)
TEACHERS' CLASSROOMS - 1985	*187 (33.2%)*	*799 (24.2%)*
MOVE AS NEEDED	282 (48.6%)	1,226 (25.5%)
MOVE AS NEEDED - 1985	*273 (48.4%)*	*934 (28.2%)*
OTHER LOCATION	75 (12.9%)	189 (3.9%)
OTHER LOCATION - 1985	*44 (7.8%)*	*154 (4.7%)*
UNACCOUNTED FOR		-350 (-7.3%)
UNACCOUNTED FOR - 1985		*49 (1.5%)*
TOTAL		**20,551(100%)**
TOTAL - 1985		***13,748(100%)***

GRAPH 12

Location of Microcomputers in Elementary Schools



The largest proportion of microcomputers (37.1%) seem to be located in microcomputer laboratories but only 34.0% of the 580 elementary schools surveyed reported having a microcomputer laboratory. From the data in Table 26, it would appear that the average microcomputer laboratory contains just over 13 microcomputers. The largest proportion of elementary schools (48.6%) reported having microcomputers on mobile carts so that they could easily be transported to different areas of the school as required. This finding was consistent with results reported one year earlier which indicated that 48.4% of the elementary schools surveyed had microcomputers on mobile carts.

The greatest increase in proportionate distribution of microcomputers in elementary schools appears to have occurred in the proportion of microcomputers allocated to the general purpose microcomputer laboratory. This proportion has increased from 26.7% to 37.1% in one year. The proportion of elementary schools surveyed that reported having a general purpose microcomputer laboratory also increased significantly, rising from 22.5% in January, 1985 to 34.0% in January, 1986.

Respondents were also asked to indicate the planned physical location of the additional microcomputers they planned to purchase during the next fiscal year. Table 25 presents the findings of this portion of the survey. Quantities indicated in italics represent the total number of microcomputers available at each physical location on January 1, 1986 and are included for comparison purposes only. These results indicate that a smaller proportion (31.7%) of the new microcomputers which are purchased for elementary schools during the current fiscal year are destined to be located in general purpose microcomputer laboratories than is now the case (37.1% of all microcomputers in elementary schools were located in general purpose microcomputer laboratories on January 1, 1986). A larger proportion (8.9%, up from 4.9%) of the new microcomputers will be located in the school administration office.

TABLE 25

Location of Microcomputers Planned to be Purchased
by Elementary Schools During 1986
(January 1986 Figures Shown in Italics)

LOCATION	NUMBER OF SCHOOLS	NUMBER OF MICROCOMPUTERS
MICRO LAB.	70 (12.1%)	234 (31.7%)
MICRO LAB.	*197 (34.0%)*	*1,784 (37.1%)*
RESOURCE ROOM	47 (8.1%)	91 (12.3%)
RESOURCE ROOM	*199 (34.3%)*	*527 (11.0%)*
ADMIN. OFFICE	50 (8.6%)	66 (8.9%)
ADMIN. OFFICE	*208 (35.9%)*	*234 (4.9%)*
TEACHERS' CLASSROOMS	51 (8.8%)	158 (21.4%)
TEACHERS' CLASSROOMS	*233 (40.2%)*	*1,197 (24.9%)*
MOVE AS NEEDED	69 (11.9%)	188 (25.4%)
MOVE AS NEEDED	*282 (48.6%)*	*1,226 (25.5%)*
OTHER LOCATION	12 (2.1%)	20 (2.7%)
OTHER LOCATION	*75 (12.9%)*	*189 (3.9%)*
UNACCOUNTED FOR		-18 (-2.4%)
UNACCOUNTED FOR		*-350 (-7.3%)*
TOTAL		**739(100%)**
TOTAL - 1986		***4,807(100%)***

Respondents were also asked to indicate the ideal numbers of microcomputers in each of the physical locations. The results of these responses are presented in Table 26. Graph 13 illustrates the comparison between the actual number of microcomputers reported in elementary schools on January 1, 1986 and the ideal number of microcomputers required in elementary schools. These results indicate that, ideally, the largest proportion of microcomputers in elementary schools (37.9%) should be located in a general purpose microcomputer laboratory, while the second largest proportion

(25.4%) should be located in teachers' classrooms. While a large proportion (25.5%) of the microcomputers located in the elementary schools are now equipped for transporting to various locations in the school as needed, the results of this portion of the survey suggest that this is NOT considered ideal. Ideally, respondents indicated that only 10.8% of the microcomputers in elementary schools should be equipped for transporting to various locations. This finding is further supported by the fact that 48.6% of the elementary schools reported having one or more microcomputers equipped for transporting to various locations, yet only 19.1% of the elementary schools indicated that, ideally, they should have one or more microcomputers so equipped.

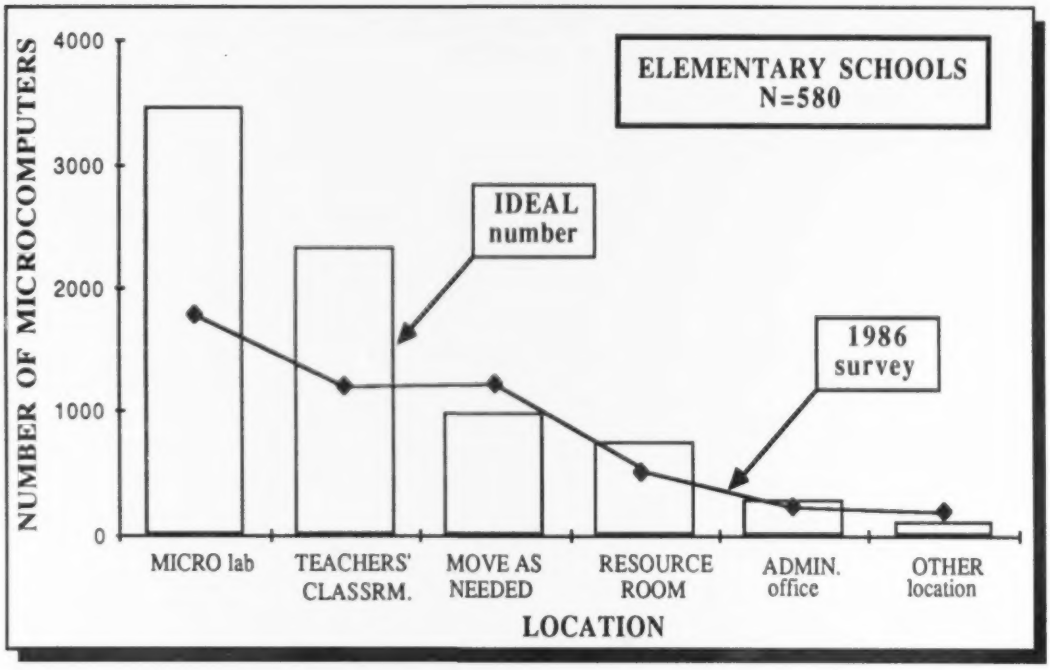
TABLE 26

Ideal Location of Microcomputers in Elementary Schools
(January 1986 Figures Shown in Italics)

LOCATION	NUMBER OF SCHOOLS	NUMBER OF MICROCOMPUTERS
MICRO LAB.	204 (35.2%)	3,462 (37.9%)
MICRO LAB.	*197 (34.0%)*	*1,784 (37.1%)*
RESOURCE ROOM	203 (35.0%)	748 (8.2%)
RESOURCE ROOM	*199 (34.3%)*	*527 (11.0%)*
ADMIN. OFFICE	222 (38.3%)	284 (3.1%)
ADMIN. OFFICE	*208 (35.9%)*	*234 (4.9%)*
TEACHERS' CLASSROOM	170 (29.3%)	2,324 (25.4%)
TEACHERS' CLASSROOM	*233 (40.2%)*	*1,197 (24.9%)*
MOVE AS NEEDED	111 (19.1%)	984 (10.8%)
MOVE AS NEEDED	*282 (48.6%)*	*1,226 (25.5%)*
OTHER LOCATION	35 (6.0%)	120 (1.3%)
OTHER LOCATION	*75 (12.9%)*	*189 (3.9%)*
UNACCOUNTED FOR		1,217 (13.3%)
UNACCOUNTED FOR		*-350 (-7.3%)*
TOTAL		**9,139(100%)**
TOTAL		***20,551(100%)***

GRAPH 13

Comparison of Actual (January 1, 1986) and Ideal Number of Microcomputers in Elementary Schools by Location



F. Specially Equipped Microcomputers - Elementary Schools

Respondents were asked to report the number of microcomputers they had in the school which had been specially equipped to generate French characters. A total of 46 of the 580 schools surveyed (7.9%) indicated that they had one or more microcomputers specially equipped to generate French characters. The total number of microcomputers equipped in this manner was 173 (3.6% of the total installed base of microcomputers in elementary schools). A total of 36 elementary school respondents (6.2%) indicated that they were planning to equip microcomputers to generate French characters during the current fiscal year. The number of microcomputers specially

equipped with French characters which would be added in the current fiscal year was reported to be 112 (15.2% of the microcomputers planned for the current fiscal year). Respondents were asked to indicate what they believed to be the ideal number of microcomputers specially equipped with French characters for their school. A total of 123 of the 580 elementary schools (21.2%) indicated that, ideally, they should have one or more microcomputers specially equipped to generate French characters and they indicated that, ideally, the total number of microcomputers that should be so equipped was 807 (8.8% of the ideal number of microcomputers reported). The responses to questions involving microcomputers specially equipped to generate French characters are summarized in Table 27.

TABLE 27

Microcomputers Specially Equipped to
Generate French Characters - Elementary Schools

	NUMBER OF SCHOOLS	NUMBER OF COMPUTERS
Installed as of January 1, 1986	46 (7.9%)	173 (3.6%)
Number to be added this fiscal year	36 (6.2%)	112 (15.2%)
Total installed at end of this fiscal year	82 (14.1%)	285 (5.1%)
Ideal number	123 (21.2%)	807 (8.8%)

Respondents were also asked to report the number of microcomputers they had in the school which had been specially equipped for use by physically disadvantaged students. A total of 19 of the 580 schools surveyed (3.3%) indicated that they had one or more microcomputers specially equipped for use by physically disadvantaged students. The total number of microcomputers

equipped in this manner was 19 (0.4% of the total installed base of microcomputers in elementary schools). A total of 5 of the 580 elementary school respondents (0.9%) indicated that they were planning to equip microcomputers for use by physically disadvantaged students during the current fiscal year. The number of microcomputers specially equipped for use by physically disadvantaged students which would be added in the current fiscal year was reported to be 5 (0.7% of the microcomputers planned for the current fiscal year). Respondents were asked to indicate what they believed was the ideal number of microcomputers specially equipped for use by physically disadvantaged students for their school. A total of 107 of the 580 elementary schools surveyed (18.4%) indicated that, ideally, they should have one or more microcomputers specially equipped for use by physically disadvantaged students and, ideally, they indicated that the total number of microcomputers that should be so equipped was 156 (1.7% of the ideal number of microcomputers reported). The responses to questions involving microcomputers specially equipped for use by physically disadvantaged students are summarized in Table 28.

TABLE 28

Microcomputers Specially Equipped for Use by
Physically Disadvantaged Students - Elementary Schools

	NUMBER OF SCHOOLS	NUMBER OF COMPUTERS
Installed as of January 1, 1986	19 (3.3%)	19 (0.4%)
Number to be added this fiscal year	5 (0.9%)	5 (0.7%)
Total installed at end of this fiscal year	24 (4.1%)	24 (0.4%)
Ideal number	107 (18.4%)	156 (1.7%)

G. Microcomputer Maintenance - Elementary Schools

Respondents were asked to indicate how they were currently handling microcomputer maintenance in their school. A total of 299 of the 580 elementary school respondents (51.6%) indicated that maintenance was performed by a maintenance person at central office. It was interesting to note that more than 10% of the respondents indicated that maintenance was either performed by a teacher (4.5%) or by the computer coordinator (5.7%). A summary of responses to the question of microcomputer maintenance is presented in Table 29.

TABLE 29

Microcomputer Maintenance - Elementary Schools

	NUMBER OF SCHOOLS	PERCENTAGE
Teacher	26	4.5%
Computer Coordinator	33	5.7%
Central Office Maintenance Person	299	51.6%
Local Commercial Shop	64	11.0%
Commercial Shop in Another City	79	13.6%
Other	14	2.4%
No Response	65	11.2%
TOTAL	**580**	**100.0%**

H. Access to Microcomputers - Elementary Schools

Respondents were asked to indicate the extent to which both students and teachers in their school had access to microcomputers in the school beyond normal class times. The results indicated that in 343 of the 580 elementary schools surveyed (59.1%), students had limited access to the microcomputers beyond normal class times, while in 44 elementary schools (7.6%), students had no access to the microcomputers beyond normal class time. A total of 386 respondents (66.6%) indicated that teachers had easy access to the microcomputers beyond normal class time. The findings with respect to access to the microcomputers in the school are summarized in Table 30.

TABLE 30

Access to Microcomputers - Elementary Schools

	BY STUDENTS	BY TEACHERS
Easy access	154 (26.6%)	386 (66.6%)
Limited access	343 (59.1%)	145 (25.0%)
No access	44 (7.6%)	6 (1.0%)
No response	39 (6.7%)	43 (7.4%)
TOTAL	**580 (100.0%)**	**580 (100.0%)**

I. Keyboarding - Elementary Schools

Respondents were asked to indicate what emphasis they are now placing on keyboarding in their school by specifying the proportion of students in the school who are now taking one or more courses in keyboarding. The results indicated that in 317 of the 580 elementary schools

surveyed (54.7%) less than one fifth of the students took a course in keyboarding. In 41 schools (7.1%), more than four fifths of the students took one or more courses in keyboarding. The findings with respect to the extent to which keyboarding is now being taught are summarized in Table 31.

TABLE 31

Extent to Which Keyboarding Courses
are Presently Being Taught - Elementary Schools

STUDENTS TAKING KEYBOARDING COURSES	NUMBER OF SCHOOLS	PERCENT
less than one fifth	317	54.7%
between one fifth and two fifths	87	15.0%
between two fifths and three fifths	51	8.8%
between three fifths and four fifths	20	3.4%
more than four fifths	41	7.1%
no response	64	11.0%
TOTAL	**580**	**100.0%**

Respondents were also asked to indicate what emphasis they will place on keyboarding in their school during the next year by specifying the proportion of students in the school who will be taking one or more courses in keyboarding at that time. The results indicated that in 203 of the 580 elementary schools surveyed (35.0%) less than one fifth of the students will be taking a course in keyboarding next year. In 60 elementary schools (10.3%), more than four fifths of the students will take one or more courses in keyboarding next year. The findings with respect to the extent to which keyboarding will be taught next year are summarized in Table 32.

TABLE 32

Extent to Which Keyboarding Courses
Will Be Taught - Elementary Schools

STUDENTS TAKING KEYBOARDING COURSES	NUMBER OF SCHOOLS	PERCENT
less than one fifth	203	35.0%
between one fifth and two fifths	116	20.0%
between two fifths and three fifths	82	14.1%
between three fifths and four fifths	37	6.4%
more than four fifths	60	10.4%
no response	82	14.1%
TOTAL	**580**	**100.0%**

Respondents were asked to indicate what emphasis they would place on keyboarding in their school in an ideal situation by specifying the proportion of students in the school who should be taking one or more courses in keyboarding. The results indicated that in 203 of the 580 elementary schools surveyed (35.0%) more than four fifths of the students should take one or more courses in keyboarding. The findings with respect to the extent to which keyboarding should be taught in an ideal situation are summarized in Table 33.

TABLE 33

Extent to Which Keyboarding Courses
Should Ideally Be Taught - Elementary Schools

STUDENTS TAKING KEYBOARDING COURSES	NUMBER OF SCHOOLS	PERCENT
less than one fifth	59	10.2%
between one fifth and two fifths	75	12.9%
between two fifths and three fifths	99	17.1%
between three fifths and four fifths	74	12.7%
more than four fifths	203	35.0%
no response	70	12.1%
TOTAL	**580**	**100.0%**

J. Administrative Uses of Microcomputers - Elementary Schools

A total of 208 of the 580 elementary schools surveyed (35.9%) reported having one or more microcomputers in the school administration office. In the next portion of the survey, respondents were asked to indicate the kinds of administrative software that were being used in the school. A summary of the results of this portion of the survey is presented in Table 34.

TABLE 34

Use of Microcomputers for Administrative Tasks - Elementary Schools

TYPE OF USE	NUMBER OF SCHOOLS
INTEGRATED SOFTWARE	144 (24.8%)
WORD PROCESSING SOFTWARE	235 (40.5%)
SPREADSHEET SOFTWARE	112 (19.3%)
DATA BASE MANAGEMENT SOFTWARE	109 (18.8%)
COMMUNICATIONS SOFTWARE	39 (6.7%)
SCHOOL SCHEDULING SOFTWARE	4 (0.7%)
GRADE/ATTENDANCE RECORDING	59 (10.2%)
SCHOOL ACCOUNTING	66 (11.4%)
SCHOOL TIMETABLING	6 (1.0%)
SCHOOL BUS SCHEDULING	9 (1.6%)

Respondents were also asked to indicate which administrative software packages they expected to be using next year, and which software packages they "should" be using. Many elementary school respondents (28.5%) indicated that they expected to be using word processing software for administrative purposes next year. The greatest proportion of respondents (just over 30%) indicated that they "should" be using grade/attendance recording software and school accounting software. The summary of responses to these questions is presented in Table 35.

TABLE 35

Expected Use of Software for Administrative Tasks Next Year
and Perception of Software That Should Be Used
for Administrative Tasks - Elementary Schools

TYPE OF USE	NUMBER OF SCHOOLS will use	should use
INTEGRATED SOFTWARE	105 (18.1%)	129 (22.2%)
WORD PROCESSING SOFTWARE	167 (28.8%)	164 (28.3%)
SPREADSHEET SOFTWARE	112 (19.3%)	127 (21.9%)
DATA BASE MANAGEMENT SOFTWARE	81 (14.0%)	99 (17.1%)
COMMUNICATIONS SOFTWARE	41 (7.1%)	126 (21.7%)
SCHOOL SCHEDULING SOFTWARE	10 (1.7%)	90 (15.5%)
GRADE/ATTENDANCE RECORDING	71 (12.2%)	175 (30.2%)
SCHOOL ACCOUNTING	80 (13.8%)	184 (31.7%)
SCHOOL TIMETABLING	20 (3.4%)	112 (19.3%)
SCHOOL BUS SCHEDULING	7 (1.2%)	25 (4.3%)

K. Microcomputer-Related Training for Teachers - Elementary Schools

The survey included a number of items dealing with teacher training as it relates to the use of microcomputers. First, respondents were asked to estimate the proportion of their staff who had received training in the use of microcomputers in education as a result of various options. The type of training that was made available to most staff was participation in school workshops. The type of training that was made available to least staff was training that was the result of three or more university or college courses.

Table 36 shows the various types of training considered and the proportion of responses to each.

TABLE 36

Staff Training in the Use of
Microcomputers - Elementary Schools

TYPE OF TRAINING	NUMBER OF SCHOOLS IN WHICH MOST teachers trained by	SOME teachers trained by	NO teachers trained by
SCHOOL WORKSHOPS	313 (54.0%)	186 (32.1%)	24 (4.1%)
DISTRICT-SPONSORED WORKSHOPS	174 (30.0%)	337 (58.1%)	20 (3.4%)
ONE UNIVERSITY OR COLLEGE COURSE	9 (1.6%)	391 (67.4%)	86 (14.8%)
TWO UNIVERSITY OR COLLEGE COURSES	2 (0.3%)	193 (33.3%)	218 (37.6%)
THREE OR MORE UNIV. OR COLLEGE COURSES	1 (0.2%)	80 (13.8%)	305 (52.6%)
OTHER FORMAL TRAINING	4 (0.7%)	87 (15.0%)	193 (33.3%)
SELF-TAUGHT	73 (12.6%)	377 (65.0%)	31 (5.3%)

Respondents were asked to indicate what additional training their staff needed in the field of microcomputing. The results indicated that the greatest need for additional training was in the use of productivity software and integration of computers into the curriculum.

TABLE 37

Additional Training Needs in the Use of Microcomputers - Elementary Schools

TYPE OF TRAINING	NUMBER OF SCHOOLS IN WHICH MOST teachers trained by	SOME teachers trained by	NO teachers trained by
INTRODUCTORY COMPUTER LITERACY	124 (21.4%)	282 (48.6%)	85 (14.7%)
USING PRODUCTIVITY SOFTWARE	261 (45.0%)	233 (40.2%)	13 (2.2%)
COMPUTER PROGRAMMING	118 (20.3%)	207 (35.7%)	125 (21.6%)
INTEGRATION OF COMP. IN THE CURRICULUM	384 (66.2%)	151 (26.0%)	7 (1.2%)
OTHER	21 (3.6%)	9 (1.6%)	7 (1.2%)

Respondents were asked to indicate an opinion concerning the minimum amount of pre-service training needs of teachers in the field of computing. A total of 200 of the 580 elementary school respondents surveyed (34.5%) indicated that a minimum of one university or college course would be sufficient, while 105 elementary school respondents (18.1%) indicated that a minimum of two university or college courses would be required. Only 33 of the elementary school respondents (5.7%) indicated that the mimimum requirement was three or more university or college courses. An overwhelming 449 (77.4%) of the elementary school respondents indicated that they believed that pre-service teachers needed training in the integration of microcomputer uses in the "teaching methods" courses.

L. Buildings and Facilities - Elementary Schools

The final section in the survey asked respondents to rate a series of statements that described potential problem areas related to school facilities for microcomputers. Each statement was rated in terms of three levels of importance; low, medium and high. The problem that was considered to be a high level problem by the greatest proportion of respondents was one that dealt with procuring and maintaining software. Table 38 presents a summary of the responses to all of the items in this portion of the survey.

TABLE 38

Problems Related to Buildings and Facilities - Elementary Schools

PROBLEM AREA	LEVEL OF IMPORTANCE LOW	MEDIUM	HIGH
APPROPRIATE LOCATION FOR MICROCOMPUTERS	238 (41.0%)	156 (26.9%)	150 (25.9%)
ADEQUATE ACCESS TO MICROCOMPUTERS	146 (25.2%)	202 (34.8%)	198 (34.1%)
APPROPRIATE SPATIAL LAYOUT FOR MICROCOMPUTER FACILITY	278 (47.9%)	152 (26.2%)	101 (17.4%)
ADEQUATE ENVIRONMENTAL CONDITIONS FOR MICROS	251 (43.3%)	185 (31.9%)	98 (16.9%)
ADEQUATE PHYSICAL SECURITY FOR MICROS	233 (40.2%)	182 (31.4%)	127 (21.9%)
PROVIDING STORAGE FOR MICRO EQUIPMENT/SUPPLIES	227 (39.1%)	217 (37.4%)	96 (16.6%)
PROCURING ADEQUATELY DESIGNED WORKSTATIONS	191 (32.9%)	218 (37.6%)	125 (21.6%)
PROVIDING TELECOMMUNICATION LINKS	358 (61.7%)	101 (17.4%)	67 (11.6%)
PROVIDING DISPLAY MONITORS FOR CLASSROOM DEMOS	208 (35.9%)	221 (38.1%)	107 (18.4%)
MEETING POWER REQUIREMENTS FOR MICROS	305 (52.6%)	137 (23.6%)	93 (16.0%)
MAINTAINING MICROS	161 (27.8%)	227 (39.1%)	153 (26.4%)
PROCURING AND MAINTAINING SOFTWARE	61 (10.5%)	167 (28.8%)	315 (54.3%)
OTHER	4 (0.7%)	5 (0.9%)	49 (8.4%)

V. FINDINGS - JUNIOR HIGH SCHOOLS

A. Microcomputers - Junior High Schools

A total of 105 of the schools participating in this survey were categorized as junior high schools (seventh grade to ninth grade). The student population in the junior high schools surveyed was 43,006 and the teacher population was 2,531 .

B. Computer Coordinators - Junior High Schools

Junior high school respondents were asked to indicate whether their school had an individual who had been identified as the computer coordinator by providing his or her name and telephone number on the survey response form. A total of 93 of the 105 junior high school respondents (88.6%) provided the name of the computer coordinator in the school. This result is considerably higher than the corresponding result for all of the schools surveyed which was 77.2% and was the highest reported for any of the categories considered.

C. Teachers Using Computers - Junior High Schools

Respondents in the junior high schools surveyed were asked to list the names of teachers in their school who, in their opinion, were making "extensive use" of computers in their classrooms. A total of 84 of the 105 junior high school respondents (80.0%) indicated that there was at least one teacher in the school who was making "extensive use" of computers in the

classroom. This finding is considerably higher than the corresponding result (71.9%) obtained for all schools surveyed. The total number of teachers in all junior high schools who were identified as making "extensive use" of computers in the classroom was 207 (8.2% of the teachers in the junior high schools surveyed). This finding is somewhat lower than the corresponding result obtained for all schools surveyed .

D. Number of Microcomputers - Junior High Schools

The total number of microcomputers reported by the 105 junior high schools surveyed was 1,882. This is an increase of 962 (104.6%) compared to the number of microcomputers reported in January of 1985. This brings the ratio of students to microcomputers at the elementary level down to 22.9:1 from a ratio of 44.4:1 reported one year ago. Respondents in this category indicated that they were planning to purchase an additional 281 microcomputers during the next fiscal year. Should these purchases occur, then the total number of microcomputers at the junior high school level would increase to 2,163, bringing the ratio of students to microcomputers down to 19.9:1. The average number of microcomputers per junior high school is 17.9 compared to the average across all schools which is 15.3 per school. The average number of junior high school teachers per microcomputer is 1.3:1 while the corresponding number across all schools is 1.2:1. Table 39 shows a complete breakdown of the number of microcomputers in junior high schools as well as the number of microcomputers that schools plan to purchase during the current year by brand category. Graph 14 shows a comparison of the number of microcomputers in junior high schools by brand category reported in two consecutive surveys, January 1, 1985 and January 1, 1986.

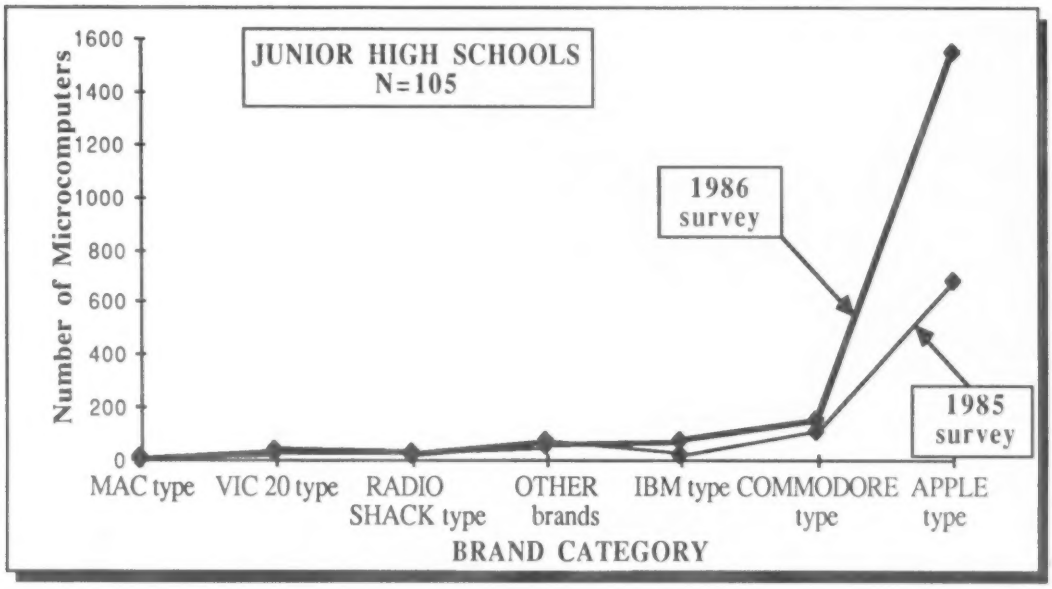
TABLE 39

Microcomputers in Junior High Schools by Brand Category
(1985 Quantities Shown in Italics)

BRAND CATEGORY	NUMBER REPORTED	NUMBER PLANNED (NEXT FISCAL YEAR)
APPLE type	1,547 (82.2%)	250 (89.0%)
APPLE type - 1985	*677 (73.6%)*	*575 (93.5%)*
MAC type	9 (0.5%)	2 (0.7%)
MAC type -1985	*1 (0.1%)*	*2 (0.3%)*
COMMODORE type	151 (8.0%)	0 (0.0%)
COMMODORE type -1985	*107 (11.6%)*	*7 (1.1%)*
VIC 20 type	26 (1.4%)	0 (0.0%)
VIC 20 type -1985	*33 (3.6%)*	*1 (0.2%)*
IBM type	69 (3.7%)	26 (9.2%)
IBM type -1985	*15 (1.6%)*	*13 (2.1%)*
RADIO SHACK type	27 (1.4%)	3 (1.1%)
RADIO SHACK type -1985	*18 (2.0%)*	*4 (0.7%)*
OTHER BRANDS	53 (2.8%)	0 (0.0%)
OTHER BRANDS -1985	*69 (7.5%)*	*13 (2.1%)*
TOTAL	**1,882(100.0%)**	**281 (100.0%)**
TOTAL-1985	***920 (100%)***	***615(100%)***

GRAPH 14

Microcomputers in Junior High Schools by Brand Category
1985 and 1986



In a survey conducted one year ago, junior high school respondents were asked to estimate the number of microcomputers they expected to purchase during 1985. The total number estimated was 615 microcomputers. The actual number of microcomputers purchased during that period was 962 which meant that elementary school respondents underestimated their expected purchases by 56.4%.

Estimates made by junior high school respondents in this survey indicated that the number of microcomputers they expected to purchase during the current fiscal year (1986) was only 281 which is a drop of 54.3% from the 1985 estimate of 615 and a drop of 70.8% from the actual number of microcomputers purchased by elementary schools during the 1985 fiscal year.

Respondents were asked to indicate what they believed would be the "ideal" number of microcomputers for their institutions. Responses indicated that the total ideal number of microcomputers for junior high schools was 2,591. This is within 37.7% of the junior high school installed base reported on January 1, 1986. Table 40 presents a summary of respondents' opinions of the "ideal" number of microcomputers in Alberta schools by brand category. Graph 15 shows a comparison of the number of microcomputers reported in junior high schools on January 1, 1986 and the ideal number of microcomputers required for junior high schools by brand category.

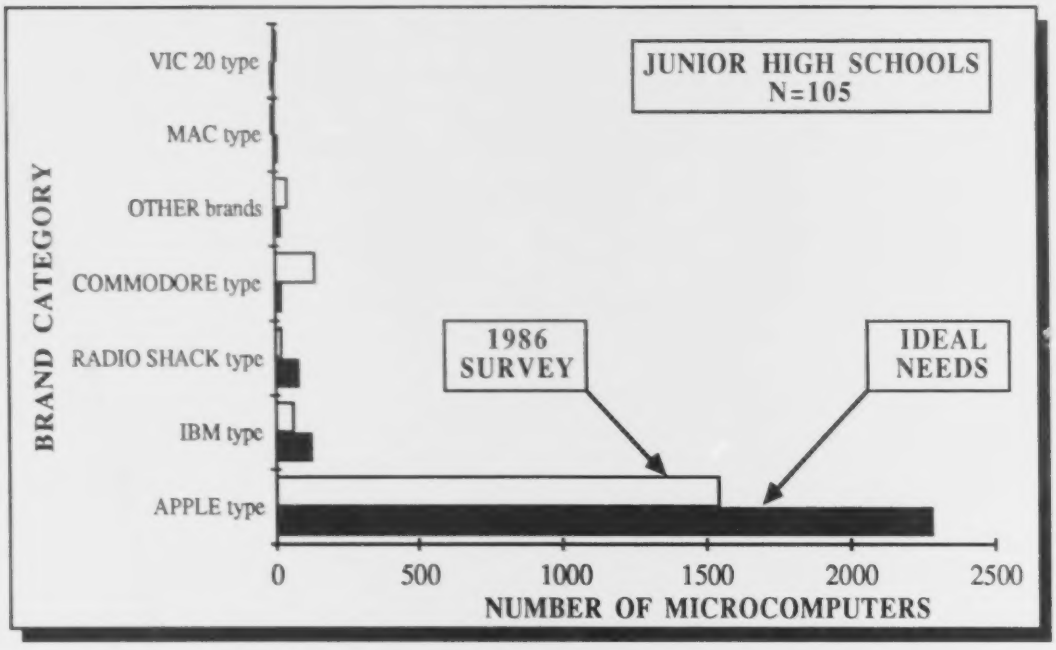
TABLE 40

Ideal Number of Microcomputers Required
in Alberta Junior High Schools - January 1986

BRAND CATEGORY	NUMBER	% OF MARKET
APPLE type	2,287	88.2%
MAC type	25	1.0%
COMMODORE type	34	1.3%
VIC 20 type	0	0.0%
IBM type	127	4.9%
RADIO SHACK type	90	3.5%
OTHER BRANDS	28	1.1%
TOTAL	**2,591**	**100.0%**

GRAPH 15

Comparison of Actual (January 1, 1986) and Ideal Number of Microcomputers in Junior High Schools by Brand Category



APPLE type microcomputers have dominated the junior high school market and all indications are that they will continue to dominate this market during the next fiscal year. Results indicated that 82.2% of all microcomputers in use at the elementary school level on January 1, 1986 were APPLE type. This is a significant increase over the results reported one year earlier which indicated that 73.6% of all microcomputers in use at the junior high school level were APPLE type. Furthermore the results of that portion of the survey which dealt with estimated purchases during the current fiscal year indicated that the proportion of new APPLE type microcomputers purchased during the current fiscal year would rise to 89.0%, significantly lower than the corresponding estimate one year earlier (93.5%). However, respondents also

indicated that 88.3% of the 2,591 microcomputers ideally required for the 105 junior high schools should be APPLE type.

Of the 580 schools that completed survey forms, 104 (99.0%) reported having one or more microcomputers in the school, while one school (1.0%) had no microcomputers at all. This is significantly higher than the corresponding result for all schools in the province which was 93.2%. This means that of 43,006 students attending 105 junior high schools that participated in this survey, only 15 (0.03%) attended a school that did not have any microcomputers.

E. Location of Microcomputers - Junior High Schools

The next section of the survey sought to determine where microcomputers in junior high schools were typically housed. Seven distinct areas of the school were identified and respondents were asked to indicate the number of microcomputers housed in each of the seven areas. An eighth area ("OTHER LOCATION") was added to provide for those cases that did not appear to be included in the other seven areas. While most respondents completed this portion of the survey, in some cases the total number of microcomputers accounted for did not agree with the number specified in a previous portion of the survey (in which respondents were asked to indicate the number of microcomputers located in the school by brand category). As a result, there was a small difference (2.7%) between the totals reported in these two portions of the survey. The results of this portion of the survey are summarized in Table 41. Quantities indicated in italics denote the quantities reported in 1985 and are shown for comparison purposes only. Graph 16 depicts the number of microcomputers housed in each of the areas on January

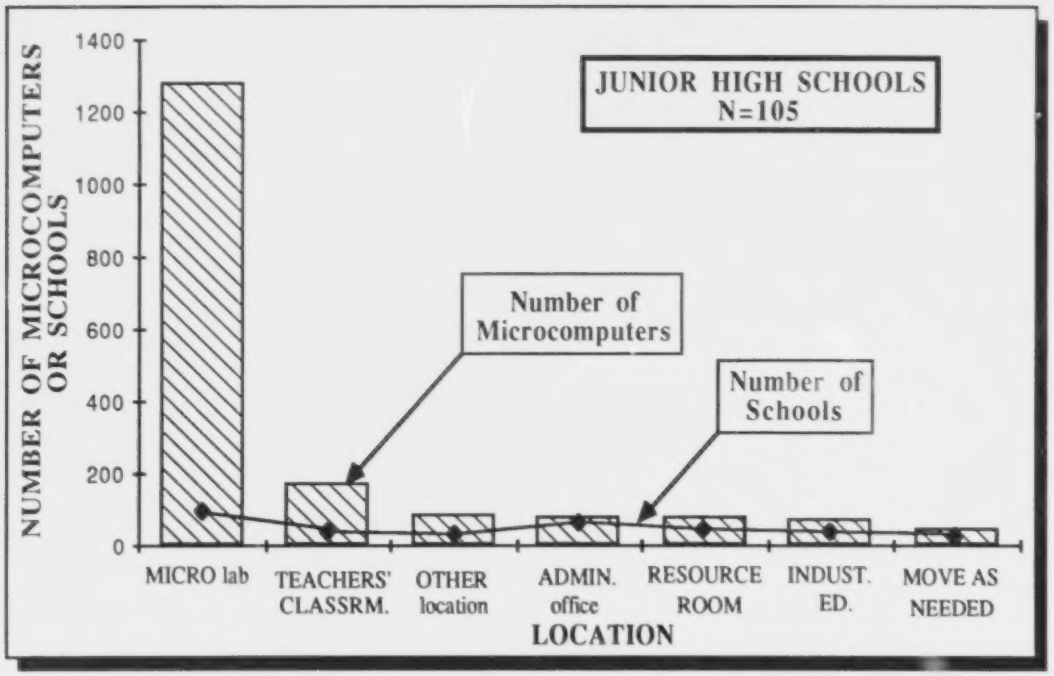
1, 1986 together with the number of junior high schools reporting microcomputers in each of the areas.

TABLE 41
Location of Microcomputers in Junior High Schools
(*1985 Quantities Shown in Italics*)

LOCATION	NUMBER OF SCHOOLS	NUMBER OF MICROCOMPUTERS
MICRO LAB.	90 (85.7%)	1,284 (68.2%)
MICRO LAB. -1985	*73 (73.0%)*	*483 (52.5%)*
RESOURCE ROOM	45 (42,9%)	77 (4.1%)
RESOURCE ROOM - 1985	*32 (32.0%)*	*97 (10.6%)*
ADMIN. OFFICE	68 (64.8%)	79 (4.2%)
ADMIN. OFFICE - 1985	*45 (45.0%)*	*50 (5.4%)*
TEACHERS' CLASSROOMS	40 (38.1%)	173 (9.2%)
TEACHERS' CLASSROOMS - 1985	*30 (30.0%)*	*139 (15.1%)*
MOVE AS NEEDED	25 (23.8%)	47 (2.5%)
MOVE AS NEEDED - 1985	*20 (20.0%)*	*39 (4.2%)*
INDUSTRIAL EDUC. LAB	37 (35.2%)	69 (3.7%)
INDUSTRIAL EDUC. LAB. - 1985	*23 (23.0%*	*46 (5.0%)*
BUSINESS EDUC.	1 (1.0%)	18 (0.9%)
BUSINESS EDUCATION- 1985	*2 (2.0%)*	*19 (2.1%)*
OTHER LOCATION	33 (31.4%)	85 (4.5%)
OTHER LOCATION - 1985	*21 (21.0%)*	*47 (5.1%)*
UNACCOUNTED FOR		50 (2.7%)
UNACCOUNTED FOR - 1985		*0 (0.0%)*
TOTAL		**1,882(100%)**
TOTAL - 1985		***920 (100%)***

GRAPH 16

Location of Microcomputers in Junior High Schools



The largest proportion of microcomputers (68.2%) are located in microcomputer laboratories and 85.7% of the 105 junior high schools surveyed reported having a microcomputer laboratory. From the data in Table 41, it would appear that the average microcomputer laboratory contains just over 14 microcomputers.

The greatest increase in proportionate distribution of microcomputers in junior high schools appears to have occurred in the proportion of microcomputers allocated to the general purpose microcomputer laboratory. This proportion has increased from 52.5% to 68.2% in one year. The proportion of junior high schools surveyed that reported having a general

purpose microcomputer laboratory also increased significantly, rising from 73.0% in January, 1985 to 85.7% in January, 1986.

Respondents were also asked to indicate the intended physical location of the additional microcomputers they planned to purchase during the next fiscal year. Table 42 presents the findings of this portion of the survey. Quantities indicated in italics represent the total number of microcomputers available at each physical location on January 1, 1986 and are included for comparison purposes only. These results indicate that a smaller proportion (61.6%) of the new microcomputers which are purchased for elementary schools during the current fiscal year are destined to be located in general purpose microcomputer laboratories than is now the case (68.2% of all microcomputers in elementary schools were located in general purpose microcomputer laboratories on January 1, 1986). A larger proportion (12.8%, up from 9.2%) of the new microcomputers will be located in teachers' classrooms.

TABLE 42

Planned Location of Microcomputers in Junior High Schools
to be Purchased During the Current Fiscal Year
(January 1986 Figures Shown in Italics)

LOCATION	NUMBER OF SCHOOLS	NUMBER OF MICROCOMPUTERS
MICRO LAB.	33 (31.4%)	173 (61.6%)
MICRO LAB. -1986	*90 (85.7%)*	*1,284 (68.2%)*
RESOURCE ROOM	8 (7.6%)	16 (5.7%)
RESOURCE ROOM - 1986	*45 (42.9%)*	*77 (4.1%)*
ADMIN. OFFICE	6 (5.7%)	6 (2.1%)
ADMIN. OFFICE - 1986	*68 (64.8%)*	*79 (4.2%)*
TEACHERS' CLASSROOMS	5 (4.8%)	36(12.8%)
TEACHERS' CLASSROOMS - 1986	*40 (38.1%)*	*173 (9.2%)*
MOVE AS NEEDED	8 (7.6%)	15 (5.3%)
MOVE AS NEEDED - 1986	*25 (23.8%)*	*47 (2.5%)*
INDUSTRIAL EDUC. LAB	2 (1.9%)	6 (2.1%)
INDUSTRIAL EDUC. LAB. - 1986	*37 (35.2%)*	*69 (3.7%)*
BUSINESS EDUC.	0 (0.0%)	0 (0.0%)
BUSINESS EDUCATION- 1986	*1 (1.0%)*	*18 (0.9%)*
OTHER LOCATION	3 (2.9%)	3 (1.1%)
OTHER LOCATION - 1986	*33 (31.4%)*	*85 (4.5%)*
UNACCOUNTED FOR		26 (9.3%)
UNACCOUNTED FOR - 1986		*50 (2.7%)*
TOTAL		**281 (100%)**
TOTAL - 1986		***1,882 (100%)***

Respondents were also asked to indicate the ideal numbers of microcomputers in each of the physical locations. The results of these responses are presented in Table 43. Graph 17 illustrates the comparison between the actual number of microcomputers reported in junior high schools on January 1, 1986 and the ideal number of microcomputers required in junior

high schools. These results indicate that, ideally, the largest proportion of microcomputers in junior high schools (58.4%) should be located in a general purpose microcomputer laboratory while the second largest proportion (19.0%) should be located in teachers' classrooms.

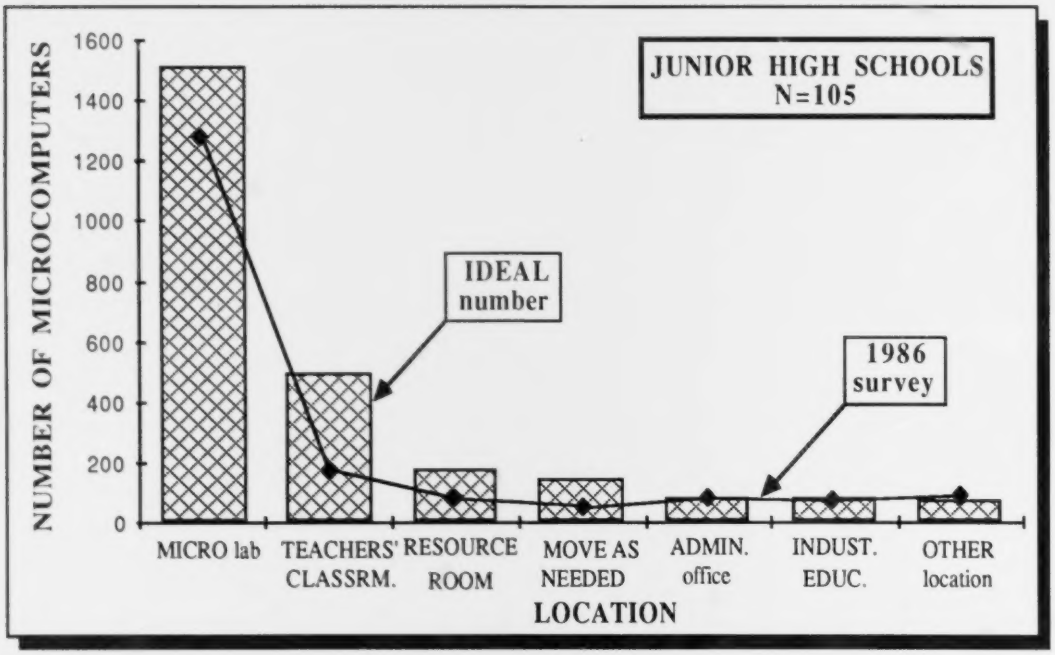
TABLE 43

Ideal Location of Microcomputers in Junior High Schools
(*January 1986 Figures Shown in Italics*)

LOCATION	NUMBER OF SCHOOLS	NUMBER OF MICROCOMPUTERS
MICRO LAB.	62 (59.0%)	1,514 (58.4%)
MICRO LAB. -1986	*90 (85.7%)*	*1,284 (68.2%)*
RESOURCE ROOM	46 (43.8%)	179 (6.9%)
RESOURCE ROOM - 1986	*45 (42.9%)*	*77(4.1%)*
ADMIN. OFFICE	49 (46.7%)	82 (3.2%)
ADMIN. OFFICE - 1986	*68 (64.8%)*	*79 (4.2%)*
TEACHERS' CLASSROOMS	34 (32.4%)	492 (19.0%)
TEACHERS' CLASSROOMS - 1986	*40 (38.1%)*	*173 (9.2%)*
MOVE AS NEEDED	28 (26.7%)	142 (5.5%)
MOVE AS NEEDED - 1986	*25 (23.8%)*	*47 (2.5%)*
INDUSTRIAL EDUC. LAB	30 (28.6%)	81 (3.1%)
INDUSTRIAL EDUC. LAB. - 1986	*37 (35.2%)*	*69 (3.7%)*
BUSINESS EDUC.	0 (0.0%)	0 (0.0%)
BUSINESS EDUCATION- 1986	*1 (1.0%)*	*18 (0.9%)*
OTHER LOCATION	20 (19.0%)	69 (2.7%)
OTHER LOCATION - 1986	*33 (31.4%)*	*85 (4.5%)*
UNACCOUNTED FOR		32 (1.2%)
UNACCOUNTED FOR - 1986		*50 (2.7%)*
TOTAL		**2,591(100%)**
TOTAL - 1986		***1,882 (100%)***

GRAPH 17

Comparison of Actual (January 1, 1986) and Ideal Number of Microcomputers in Junior High Schools by Location



F. Specially Equipped Microcomputers - Junior High Schools

Respondents in junior high schools were asked to report the number of microcomputers they had in the school which had been specially equipped to generate French characters. A total of 9 of the 105 schools surveyed (8.6%) indicated that they had one or more microcomputers specially equipped to generate French characters. The total number of microcomputers equipped in this manner was 96 (5.1%). A total of 8 respondents (7.6%) indicated that they were planning to equip microcomputers to generate French characters during the current fiscal year. The number of microcomputers specially equipped with French characters which would be added in the current fiscal

year was reported to be 29 (10.3% of the microcomputers planned for the current fiscal year). Respondents were asked to indicate what they believed to be the ideal number of microcomputers specially equipped with French characters for their school. A total of 34 schools (32.4%) indicated that, ideally, they should have one or more microcomputers specially equipped to generate French characters and, ideally, they indicated that the total number of microcomputers that should be so equipped was 396 (15.3%). The responses to questions involving microcomputers specially equipped to generate French characters are summarized in Table 44.

TABLE 44

Microcomputers Specially Equipped to
Generate French Characters - Junior High Schools

	NUMBER OF SCHOOLS	NUMBER OF COMPUTERS
Installed as of January 1, 1986	9 (8.6%)	96 (5.1%)
Number to be added this fiscal year	8 (7.6%)	29 (10.3%)
Total installed at end of this fiscal year	17 (16.2%)	125 (5.8%)
Ideal number	34 (32.4%)	396 (15.3%)

Respondents were also asked to report the number of microcomputers they had in the school which had been specially equipped for use by physically disadvantaged students. Two of the 105 junior high schools surveyed (1.9 %) indicated that they had one or more microcomputers specially equipped for use by physically disadvantaged students. The total number of microcomputers equipped in this manner was three (0.2%). One respondent (1.0%) indicated that the school was planning to equip microcomputers for use by physically

disadvantaged students during the current fiscal year. The number of microcomputers specially equipped for use by physically disadvantaged students which would be added in the current fiscal year was reported to be 1 (0.4%) of the microcomputers planned for the current fiscal year. Respondents were asked to indicate what they believed to be the ideal number of microcomputers specially equipped for use by physically disadvantaged students for their school. A total of 15 schools (4.3%) indicated that, ideally, they should have one or more microcomputers specially equipped for use by physically disadvantaged students and, ideally, they indicated that the total number of microcomputers that should be so equipped was 24 (0.9%). The responses to questions involving microcomputers specially equipped for use by physically disadvantaged students are summarized in Table 45.

TABLE 45

Microcomputers Specially Equipped for Use by
Physically Disadvantaged Students - Junior High Schools

	NUMBER OF SCHOOLS	NUMBER OF COMPUTERS
Installed as of January 1, 1986	2 (1.9%)	3 (0.2%)
Number to be added this fiscal year	1 (1.0%)	1 (0.4%)
Total installed at end of this fiscal year	3 (2.9%)	4 (0.1%)
Ideal number	15 (21.5%)	24 (0.9%)

G. Microcomputer Maintenance - Junior High Schools

A total of 54 respondents (51.4%) indicated that maintenance was performed by a maintenance person at central office. It was interesting to note that more than 10% of the respondents indicated that maintenance was either performed by a teacher (5.7%) or by the computer coordinator (6.7%). A summary of responses to the question of microcomputer maintenance is presented in Table 46.

TABLE 46

Microcomputer Maintenance - Junior High Schools

	NUMBER OF SCHOOLS	PERCENTAGE
Teacher	6	5.7%
Computer Coordinator	7	6.7%
Central Office Maintenance Person	54	51.4%
Local Commercial Shop	10	9.5%
Commercial Shop in Another City	12	11.4%
Other	1	1.0%
No Response	15	14.3%
TOTAL	**105**	**100.0%**

H. Access to Microcomputers - Junior High Schools

Respondents were asked to indicate the extent to which both students and teachers in their school had access to microcomputers in the school beyond normal class times. The results indicated that in 81 junior high schools, (77.1%) students have limited access to the microcomputers beyond normal class times while in two schools (1.9%), students have no access to the microcomputers beyond normal class time. A total of 66 respondents (62.9%) indicated that teachers have easy access to the microcomputers beyond normal class time. The findings with respect to access to the microcomputers in the school are summarized in Table 47.

TABLE 47

Access to Microcomputers - Junior High Schools

	BY STUDENTS	BY TEACHERS
Easy access	19 (18.1%)	66 (62.8%)
Limited access	81 (77.1%)	33 (31.4%)
No access	2 (1.9%)	1 (1.0%)
No response	3 (2.9%)	5 (4.8%)
TOTAL	**105 (100.0%)**	**105 (100.0%)**

I. Keyboarding - Junior High Schools

Respondents were asked to indicate what emphasis they are now placing on keyboarding in junior high schools by specifying the proportion of students in the school who are now taking one or more courses in keyboarding. The results indicated that in 48 schools (45.7%) less than one fifth of the students take a course in keyboarding. In three schools (2.9%), more than four fifths of the students were taking one or more courses in keyboarding. The findings with respect to the extent to which keyboarding is now being taught are summarized in Table 48.

TABLE 48

Extent to Which Keyboarding Courses
are Presently Being Taught - Junior High Schools

STUDENTS TAKING KEYBOARDING COURSES	NUMBER OF SCHOOLS	PERCENT
less than one fifth	48	45.7%
between one fifth and two fifths	29	27.6%
between two fifths and three fifths	13	12.4%
between three fifths and four fifths	4	3.8%
more than four fifths	3	2.9%
no response	8	7.6%
TOTAL	**105**	**100.0%**

Respondents were also asked to indicate what emphasis they will place on keyboarding in their school during the next year by specifying the proportion of students in the school who will be taking one or more courses in

keyboarding at that time. The results indicated that in 34 junior high schools (32.4%) less than one fifth of the students will be taking a course in keyboarding next year. In four schools (3.8%), more than four fifths of the students will take one or more courses in keyboarding next year. The findings with respect to the extent to which keyboarding will be taught next year are summarized in Table 49.

TABLE 49

Extent to Which Keyboarding Courses
Will Be Taught - Junior High Schools

STUDENTS TAKING KEYBOARDING COURSES	NUMBER OF SCHOOLS	PERCENT
less than one fifth	34	32.4%
between one fifth and two fifths	36	34.3%
between two fifths and three fifths	16	15.2%
between three fifths and four fifths	7	6.7%
more than four fifths	4	3.8%
no response	8	7.6%
TOTAL	**105**	**100.0%**

Respondents were asked to indicate what emphasis they would place on keyboarding in their school in an ideal situation by specifying the proportion of students in the school who should be taking one or more courses in keyboarding. The results indicated that in 45 schools (42.9%) more than four fifths of the students should take one or more courses in keyboarding. The findings with respect to the extent to which keyboarding should be taught in an ideal situation are summarized in Table 50.

TABLE 50

Extent to Which Keyboarding Courses
Should Ideally Be Taught - Junior High Schools

STUDENTS TAKING KEYBOARDING COURSES	NUMBER OF SCHOOLS	PERCENT
less than one fifth	6	5.7%
between one fifth and two fifths	13	12.4%
between two fifths and three fifths	16	15.2%
between three fifths and four fifths	16	15.2%
more than four fifths	45	42.9%
no response	9	8.6%
TOTAL	**105**	**100.0%**

J. Administrative Uses of Microcomputers - Junior High Schools

A total of 68 of the 105 junior high schools surveyed (64.8%) reported having one or more microcomputers in the school administration office. In the next portion of the survey, respondents were asked to indicate the kinds of administrative software that was being used in the school. A summary of the results of this portion of the survey is presented in Table 51.

TABLE 51

Use of Microcomputers for Administrative Tasks - Junior High Schools

TYPE OF USE	NUMBER OF SCHOOLS
INTEGRATED SOFTWARE	44 (41.9%)
WORD PROCESSING SOFTWARE	50 (47.6%)
SPREADSHEET SOFTWARE	23 (21.9%)
DATA BASE MANAGEMENT SOFTWARE	29 (27.6%)
COMMUNICATIONS SOFTWARE	13 (12.4%)
SCHOOL SCHEDULING SOFTWARE	9 (8.6%)
GRADE/ATTENDANCE RECORDING	30 (28.6%)
SCHOOL ACCOUNTING	15 (14.3%)
SCHOOL TIMETABLING	6 (5.7%)
SCHOOL BUS SCHEDULING	4 (3.8%)

The administrative task for which most schools have begun using microcomputers is word processing. Almost three-quarters of the junior high schools that are using microcomputers for administrative purposes are using word processing software. Integrated software is a close second at 64.7%.

Respondents were also asked to indicate which administrative software packages they expected to be using next year, and which software packages they "should" be using. Most respondents (33.3%) indicated that they expected to be using word processing software for administrative purposes next year. The greatest proportion of respondents (just under 30%) indicated that they "should" be using grade/attendance recording software and school

accounting software. The summary of responses to these questions is presented in Table 52.

TABLE 52

Expected Use of Software for Administrative Tasks Next Year and Perception of Software That Should Be Used for Administrative Tasks - Junior High Schools

TYPE OF USE	NUMBER OF SCHOOLS will use	should use
INTEGRATED SOFTWARE	33 (31.4%)	25 (23.8%)
WORD PROCESSING SOFTWARE	35 (33.3%)	29 (27.6%)
SPREADSHEET SOFTWARE	23 (21.9%)	18 (17.1%)
DATA BASE MANAGEMENT SOFTWARE	22 (21.0%)	18 (17.1%)
COMMUNICATIONS SOFTWARE	16 (15.2%)	23 (21.9%)
SCHOOL SCHEDULING SOFTWARE	11 (10.5%)	21 (20.0%)
GRADE/ATTENDANCE RECORDING	23 (21.9%)	31 (29.5%)
SCHOOL ACCOUNTING	14 (13.3%)	27 (25.7%)
SCHOOL TIMETABLING	15 (14.3%)	25 (23.8%)
SCHOOL BUS SCHEDULING	3 (2.9%)	6 (5.7%)

K. Microcomputer-Related Training for Teachers - Junior High Schools

The survey included a number of items dealing with teacher training as it relates to the use of microcomputers. First, respondents were asked to estimate the proportion of their staff who had received training in the use of microcomputers in education as a result of various options. The type of training that was made available to most staff was participation in district workshops. The type of training that was made available to least staff was

training that was the result of two or more university or college courses. Table 53 shows the various types of training considered and the proportion of responses to each.

TABLE 53

Staff Training in the Use of Microcomputers - Junior High Schools

TYPE OF TRAINING	NUMBER OF SCHOOLS IN WHICH MOST teachers trained by	SOME teachers trained by	NO teachers trained by
SCHOOL WORKSHOPS	42 (40.0%)	51 (48.6%)	5 (4.8%)
DISTRICT-SPONSORED WORKSHOPS	9 (8.6%)	86 (81.9%)	3 (2.9%)
ONE UNIVERSITY OR COLLEGE COURSE	3 (2.9%)	85 (81.0%)	7 (6.7%)
TWO UNIVERSITY OR COLLEGE COURSES	0 (0.0%)	64 (61.0%)	0 (0.0%)
THREE OR MORE UNIV. OR COLLEGE COURSES	0 (0.0%)	64 (61.0%)	0 (0.0%)
OTHER FORMAL TRAINING	0 (0.0%)	20 (19.0%)	31 (29.5%)
SELF-TAUGHT	9 (8.6%)	75 (71.4%)	4 (3.8%)

Respondents were asked to indicate what additional training their staff needed in the field of microcomputing. The results indicated that the greatest need for additional training was in the use of productivity software and integration of computers into the curriculum.

TABLE 54

Additional Training Needs in the Use of Microcomputers - Junior High Schools

TYPE OF TRAINING	NUMBER OF SCHOOLS IN WHICH MOST teachers trained by	SOME teachers trained by	NO teachers trained by
INTRODUCTORY COMPUTER LITERACY	31 (29.5%)	64 (61.0%)	1 (1.0%)
USING PRODUCTIVITY SOFTWARE	66 (62.9%)	32 (30.5%)	0 (0.0%)
COMPUTER PROGRAMMING	17 (16.2%)	54 (51.4%)	16 (15.2%)
INTEGRATION OF COMPUTERS IN THE CURRICULUM	79 (75.2%)	20 (19.0%)	0 (0.0%)
OTHER	9 (8.6%)	1 (1.0%)	0 (0.0%)

Respondents were asked to indicate an opinion concerning the minimum amount of pre-service training needs of teachers in the field of computing. Most respondents (41, 39.0%) indicated that a minimum of one university or college course would be sufficient, while 25 (23.8%) indicated that a minimum of two university or college courses would be required. Less than ten percent (9.5%) indicated that the minimum requirement was three or more university or college courses. An overwhelming 78 (74.3%) of the respondents indicated that they believed that pre-service teachers needed training in the integration of microcomputer uses in the "teaching methods" courses.

L. Buildings and Facilities - Junior High Schools

The final section in the survey asked respondents to rate a series of statements that described potential problem areas related to school facilities for microcomputers. Each statement was rated in terms of three levels of importance, low, medium and high. The problem that was considered to be a high level problem by the greatest proportion of respondents was one that dealt with procuring and maintaining software. Table 55 presents a summary of the responses to all of the items in this portion of the survey.

TABLE 55

Problems Related to Buildings and Facilities - Junior High Schools

PROBLEM AREA	LEVEL OF IMPORTANCE LOW	MEDIUM	HIGH
APPROPRIATE LOCATION FOR MICROCOMPUTERS	58 (55.2%)	22 (21.0%)	19 (18.1%)
ADEQUATE ACCESS TO MICROCOMPUTERS	29 (27.6%)	39 (37.1%)	30 (28.6%)
APPROPRIATE SPATIAL LAYOUT FOR MICROCOMPUTER FACILITY	56 (53.3%)	24 (22.9%)	18 (17.1%)
ADEQUATE ENVIRONMENTAL CONDITIONS FOR MICROS	47 (44.8%)	26 (24.8%)	22 (21.0%)
ADEQUATE PHYSICAL SECURITY FOR MICROS	38 (36.2%)	30 (28.6%)	30 (28.6%)
PROVIDING STORAGE FOR MICRO EQUIPMENT/SUPPLIES	50 (47.6%)	36 (34.3%)	12 (11.4%)
PROCURING ADEQUATELY DESIGNED WORKSTATIONS	28 (26.7%)	48 (45.7%)	21 (20.0%)
PROVIDING TELECOMMUNICATION LINKS	44 (41.9%)	32 (30.5%)	21 (20.0%)
PROVIDING DISPLAY MONITORS FOR CLASSROOM DEMOS	29 (27.6%)	34 (32.4%)	34 (32.4%)
MEETING POWER REQUIREMENTS FOR MICROS	55 (52.4%)	27 (25.7%)	15 (14.3%)
MAINTAINING MICROS	29 (27.6%)	36 (34.3%)	31 (29.5%)
PROCURING AND MAINTAINING SOFTWARE	8 (7.6%)	22 (21.0%)	67 (63.8%)
OTHER	0 (0.0%)	5 (4.8%)	13 (12.4%)

VI. FINDINGS - SENIOR HIGH SCHOOLS

A. Description of Senior High Schools

A total of 71 of the schools participating in this survey (5.3%) were categorized as senior high schools (tenth grade to twelfth grade). The student population in these schools was 63,149 (15.1%) and the teacher population was 3,412 (14.2%).

B. Computer Coordinators - Senior High Schools

Senior high school respondents were asked to indicate whether their school had an individual who had been identified as the computer coordinator by providing his or her name and telephone number on the survey response form. A total of 59 of the 71 senior high school respondents (83.1%) provided the name of the computer coordinator in the school. This result is considerably higher than the corresponding result for all of the schools surveyed which was 77.2%.

C. Teachers Using Computers - Senior High Schools

Respondents in the senior high schools surveyed were asked to list the names of teachers in their school who, in their opinion, were making "extensive use" of computers in their classrooms. A total of 64 of the 71 senior high school respondents (90.1%) indicated that there was at least one teacher in the school who was making "extensive use" of computers in the classroom. This finding is considerably higher than the corresponding result

obtained from all schools surveyed which was 71.9%. The total number of teachers in all senior high schools who were identified as making "extensive use" of computers in the classroom was 165 (4.8%). This finding is much lower than the corresponding result obtained from all schools surveyed (9.9%) and was proportionately the lowest of all six school categories surveyed.

D. Number of Microcomputers - Senior High Schools

The total number of microcomputers reported by these schools was 4,842. Respondents in this category indicated that they were planning to purchase an additional 1,276 microcomputers during the next fiscal year. This is an increase of 1,625 (50.5%) compared to the number of microcomputers reported in January of 1985. This brings the ratio of students to microcomputers at the senior high school level down to 13.0:1 from a ratio of 19.6:1 reported one year ago. Respondents in this category indicated that they were planning to purchase an additional 1,276 microcomputers during the next fiscal year. Should these purchases occur, then the total number of microcomputers at the senior high school level would increase to 6,118, bringing the ratio of students to microcomputers down to 10.3:1. The average number of microcomputers per senior high school is 68.2 compared to the average across all schools which is 15.3 per school. The average number of senior high school teachers per microcomputer is 0.7:1 while the corresponding number across all schools is 1.2:1. Table 56 shows a complete breakdown of the number of microcomputers in senior high schools as well as the number of microcomputers that schools plan to purchase during the current year by brand category. Graph 18 shows a comparison of the number of

microcomputers in senior high schools by brand category reported in two consecutive surveys, January 1, 1985 and January 1, 1986.

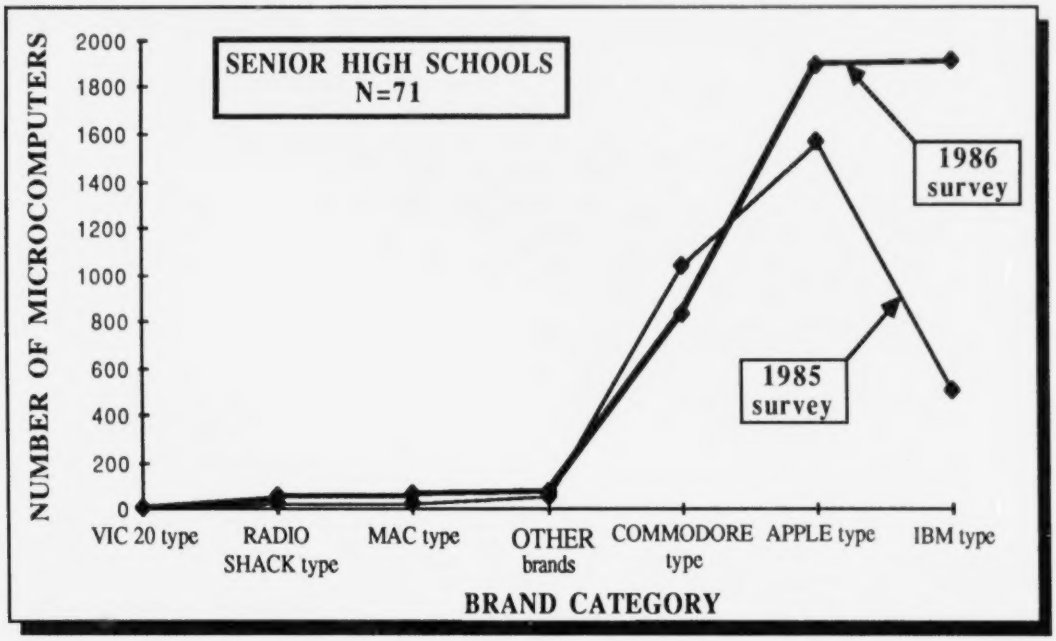
TABLE 56

Microcomputers in Senior High Schools by Brand Category
(1985 Findings Shown in Italics)

BRAND CATEGORY	NUMBER REPORTED	NUMBER PLANNED (NEXT FISCAL YEAR)
APPLE type	1,902 (39.3%)	188 (14.8%)
APPLE type - 1985	*1,573 (48.9%)*	*607 (93.6%)*
MAC type	61 (1.2%)	54 (4.2%)
MAC type -1985	*17 (0.5%)*	*13 (0.9%)*
COMMODORE type	833 (17.2%)	45 (3.5%)
COMMODORE type -1985	*1,041 (32.4%)*	*139 (1.6%)*
VIC 20 type	3 (0.1%)	0 (0%)
VIC 20 type -1985	*1 (0.03%)*	*0 (0.4%)*
IBM type	1,918 (39.6%)	979 (76.7%)
IBM type -1985	*507 (15.8%)*	*909 (1.6%)*
RADIO SHACK type	53 (1.1%)	6 (0.5%)
RADIO SHACK type -1985	*27 (0.8%)*	*139 (0.1%)*
OTHER BRANDS	72 (1.5%)	4 (0.3%)
OTHER BRANDS -1985	*51 (1.6%)*	*32 (1.8%)*
TOTAL	**4,842 (100%)**	**1,276 (100%)**
TOTAL-1985	***3,217 (100%)***	***1,839 (100%)***

GRAPH 18

Microcomputers in Senior High Schools by Brand Category
1985 and 1986



In a survey conducted one year ago, senior high school respondents were asked to estimate the number of microcomputers they expected to purchase during 1985. The total number estimated was 1,839 microcomputers. The actual number of microcomputers purchased during that period was 1,625 which meant that senior high school respondents overestimated their expected purchases by 13.2%.

Estimates made by senior high school respondents in this survey indicated that the number of microcomputers they expected to purchase during the current fiscal year (1986) was only 1,276 which is a drop of 30.6% from

the 1985 estimate of 1,839 and a drop of 21.5% from the actual number of microcomputers purchased by senior high schools during the 1985 fiscal year.

Respondents were asked to indicate what they believed would be the "ideal" number of microcomputers for their institution. Respondents indicated that, ideally, the total number of microcomputers required in senior high schools was 3,475. This is considerably lower than the 4,482 microcomputers that were reported in senior high schools on January 1, 1986. According to the responses to this part of the survey, respondents feel that the ideal ratio of students to microcomputers at the senior high school level would be 18.2:1. Table 57 presents a summary of senior high school respondents' opinions concerning the "ideal" number of microcomputers in Alberta senior high schools by brand category. Graph 19 shows a comparison of the number of microcomputers reported in senior high schools on January 1, 1986 and the ideal number of microcomputers required for senior high schools by brand category.

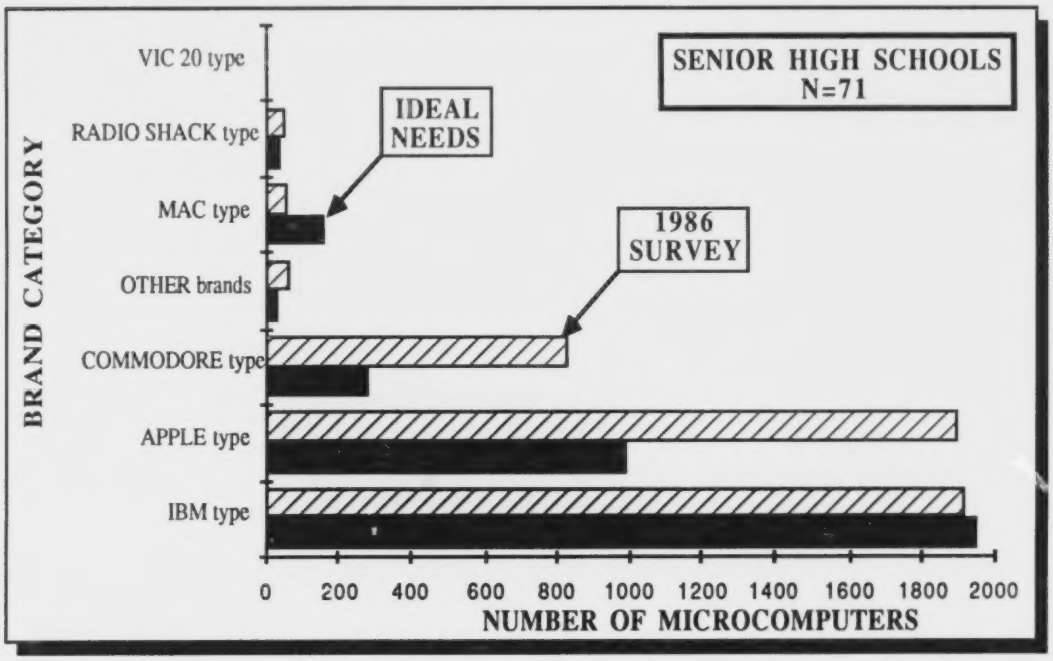
TABLE 57

Ideal Number of Microcomputers Required in Senior High Schools - January 1986

BRAND CATEGORY	NUMBER	% OF MARKET
APPLE type	995	28.6%
MAC type	166	4.8%
COMMODORE type	278	8.0%
VIC 20 type	6	0.2%
IBM type	1,955	56.2%
RADIO SHACK type	41	1.2%
OTHER BRANDS	34	1.0%
TOTAL	**3,475**	**100.0%**

GRAPH 19

Comparison of Actual (January 1, 1986) and Ideal Number of Microcomputers in Senior High Schools by Brand Category



While APPLE type microcomputers have dominated most segments of the school market, IBM type microcomputers have begun to dominate the senior high school market, and all indications are that they will continue to dominate the senior high school market during the next fiscal year. With 63,149 students enrolled in the 71 senior high schools surveyed, the number of students per microcomputer at the senior high school level is 13.0, down considerably from 19.6 reported in 1985. This is considerably lower than the corresponding result obtained for all schools which was 20.3 to 1. If senior high schools are successful in acquiring additional microcomputers, as indicated by this survey, the total number of microcomputers in senior high schools will rise to 6,118 and the ratio of students to microcomputers will decrease to 10.3. The average number of microcomputers per senior high school is 68.2 compared to the average across all schools which is 15.3 per school. The average number of senior high school teachers per microcomputer is 0.7:1 while the corresponding number across all schools is 1.2:1. All of the 71 senior high schools surveyed had one or more computers at the school.

E. Location of Microcomputers - Senior High Schools

The next section of the survey sought to determine where microcomputers in Alberta schools were typically housed. Seven distinct areas of the school were identified and respondents were asked to indicate the number of microcomputers housed in each of the seven areas. An eighth category ("OTHER LOCATION") was added to provide for those cases that did not appear to be included in the other seven areas. While most respondents completed this portion of the survey, in some cases the total number of microcomputers accounted for in this portion of the survey did not agree with the number specified in a previous portion of the survey (in which respondents

were asked to indicate the number of microcomputers located in the school by brand category). As a result, there is a small difference (1.4%) between the totals reported in these two portions of the survey. The results of this portion of the survey are summarized in Table 58. Quantities indicated in italics denote the quantities reported in 1985 and are shown for comparison purposes only. Graph 20 depicts the number of microcomputers housed in each of the areas on January 1, 1986 together with the number of senior high schools reporting microcomputers in each of the areas.

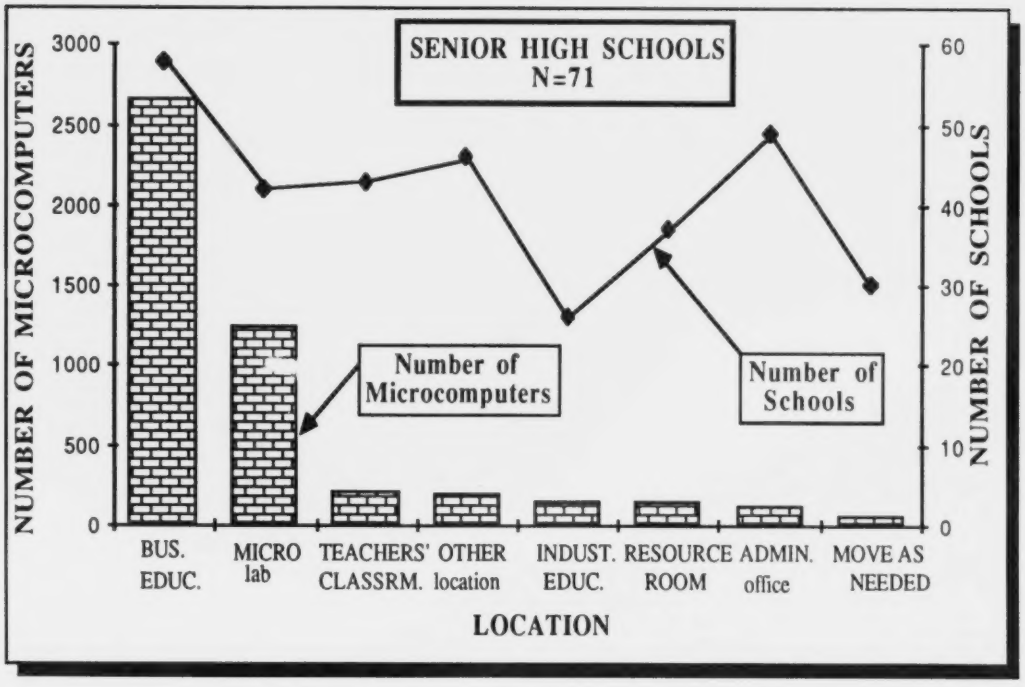
TABLE 58

Location of Microcomputers in Senior High Schools
(*1985 Quantities Shown in Italics*)

LOCATION	NUMBER OF SCHOOLS	NUMBER OF MICROCOMPUTERS
MICRO LAB.	42 (59.2%)	1,248 (25.9%)
MICRO LAB. -1985	*49 (68.1%)*	*1,227 (38.2%)*
RESOURCE ROOM	37 (52.1%)	142 (2.9%)
RESOURCE ROOM - 1985	*29 (40.3%)*	*90 (2.8%)*
ADMIN. OFFICE	49 (69.0%)	116 (2.4%)
ADMIN. OFFICE - 1985	*38 (52.8%)*	*73 (2.3%)*
TEACHERS' CLASSROOMS	43 (60.6%)	210 (4.3%)
TEACHERS' CLASSROOMS - 1985	*40 (55.6%)*	*179 (5.6)*
MOVE AS NEEDED	30 (42.3%)	52 (1.1%)
MOVE AS NEEDED - 1985	*27 (37.5%)*	*48 (1.5%)*
INDUSTRIAL EDUC. LAB	26 (36.6%)	146 (3.0%)
INDUSTRIAL EDUC. LAB. - 1985	*19 (26.4%)*	*97 (3.0%)*
BUSINESS EDUC.	58 (81.7%)	2,659 (54.9%)
BUSINESS EDUCATION- 1985	*47 (65.3%)*	*1,378 (42.8%)*
OTHER LOCATION	46 (64.8%)	199 (4.1%)
OTHER LOCATION - 1985	*30 (41.7%)*	*101 (3.1%)*
UNACCOUNTED FOR		70 (1.4%)
UNACCOUNTED FOR - 1985		*24 (0.7%)*
TOTAL		**4,842(100%)**
TOTAL - 1985		***3,217(100%)***

GRAPH 20

Location of Microcomputers in Senior High Schools



The largest proportion of microcomputers (54.9%) seem to be located in business education laboratories. While there have been increases in the number of microcomputers in all categories, the proportion of microcomputers in general purpose microcomputer laboratories has dropped from 38.2 to 25.8.

Respondents were also asked to indicate the intended physical location of the additional microcomputers they planned to purchase during the next fiscal year. Table 59 presents the findings of this portion of the survey. Quantities indicated in italics represent the total number of microcomputers available at each physical location on January 1, 1986 and are included for comparison purposes only. These results indicate that a smaller proportion (28.0%) of the new microcomputers which will be purchased for high schools

during the current fiscal year are destined to be located in general purpose microcomputer laboratories than is now the case (38.2% of all microcomputers in senior high schools were located in general purpose microcomputer laboratories on January 1, 1986). A larger proportion (62.1%, up from 42.8%) of the new microcomputers will be located in business education classrooms.

TABLE 59

Location of Microcomputers Planned to be Purchased by Senior High Schools During 1986 *(January 1986 Figures Shown in Italics)*

LOCATION	NUMBER OF SCHOOLS	NUMBER OF MICROCOMPUTERS
MICRO LAB.	21 (29.6%)	357 (28.0%)
MICRO LAB. -1986	*42 (59.2%)*	*1,248 (25.8%)*
RESOURCE ROOM	11 (15.5%)	59 (4.6%)
RESOURCE ROOM - 1986	*37 (52.1%)*	*142 (2.9%)*
ADMIN. OFFICE	9 (12.7%)	37 (2.9%)
ADMIN. OFFICE - 1986	*49 (69.0%)*	*116 (2.4%)*
TEACHERS' CLASSROOMS	6 (8.4%)	12 (0.9%)
TEACHERS' CLASSROOMS - 1986	*43 (60.6%)*	*210 (4.3%)*
MOVE AS NEEDED	3 (4.2%)	5 (0.4%)
MOVE AS NEEDED - 1986	*30 (42.3%)*	*52 (1.1%)*
INDUSTRIAL EDUC. LAB	4 (5.6%)	19 (1.5%)
INDUSTRIAL EDUC. LAB. - 1986	*26 (36.6%)*	*146 (3.0%)*
BUSINESS EDUC.	30 (42.3%)	792 (62.1%)
BUSINESS EDUCATION- 1986	*58 (81.7%)*	*2,659 (54.9%)*
OTHER LOCATION	3 (4.2%)	9 (0.7%)
OTHER LOCATION - 1986	*46 (64.8%)*	*199 (4.1%)*
UNACCOUNTED FOR		-14 (-1.1%)
UNACCOUNTED FOR - 1986		*70 (1.4%)*
TOTAL		**1,276 (100%)**
TOTAL - 1986		***4,842 (100%)***

Respondents were also asked to indicate the ideal numbers of microcomputers in each of the physical locations. The results of these responses are presented in Table 60. Graph 21 illustrates the comparison between the actual number of microcomputers reported in senior high schools on January 1, 1986 and the ideal number of microcomputers required in senior high schools. These results indicate that, ideally, the largest proportion of microcomputers (48.3%) should be located in a business education laboratory while the second largest proportion (29.6%) should be located in a general purpose microcomputer laboratory.

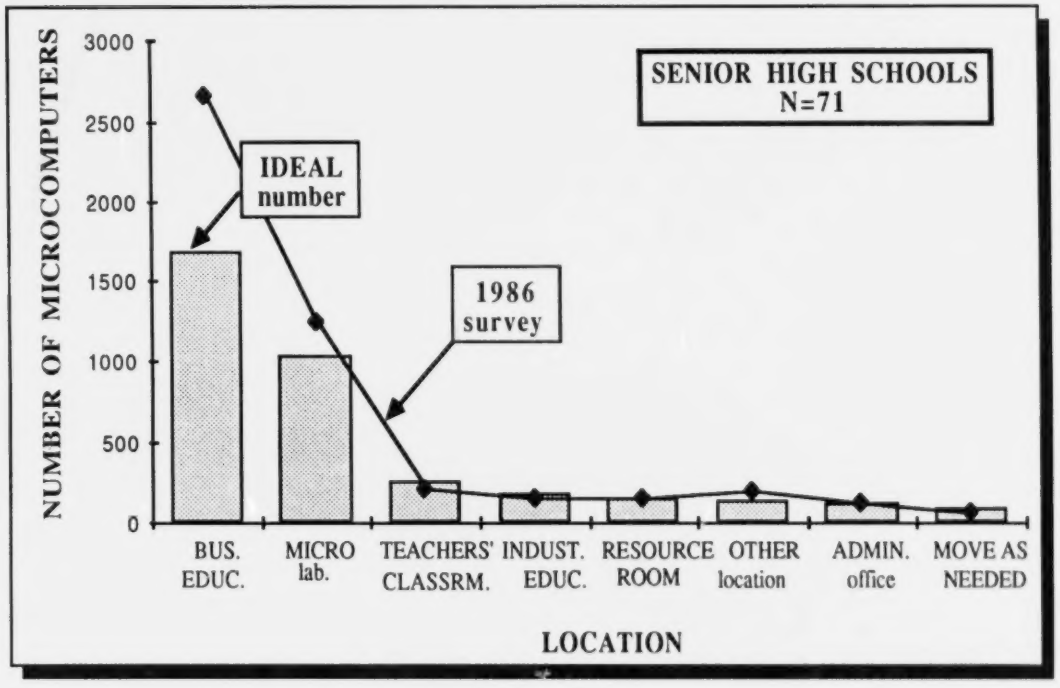
TABLE 60

Ideal Location of Microcomputers in Senior High Schools
(January 1986 Figures Shown in Italics)

LOCATION	NUMBER OF SCHOOLS	NUMBER OF MICROCOMPUTERS
MICRO LAB.	21 (29.6%)	1,028 (29.6%)
MICRO LAB. -1986	*42 (59.2%)*	*1,248 (25.8%)*
RESOURCE ROOM	11 (15.5%)	142 (4.1%)
RESOURCE ROOM - 1986	*37 (52.1%)*	*142 (2.9%)*
ADMIN. OFFICE	9 (12.7%)	124 (3.5%)
ADMIN. OFFICE - 1986	*49 (69.0%)*	*116 (2.4%)*
TEACHERS' CLASSROOMS	6 (8.4%)	245 (7.0%)
TEACHERS' CLASSROOMS - 1986	*43 (60.6%)*	*210 (4.3%)*
MOVE AS NEEDED	3 (4.2%)	79 (2.3%)
MOVE AS NEEDED - 1986	*30 (42.3%)*	*52 (1.1%)*
INDUSTRIAL EDUC. LAB	4 (5.6%)	173 (5.0%)
INDUSTRIAL EDUC. LAB. - 1986	*26 (36.6%)*	*146 (3.0%)*
BUSINESS EDUC.	30 (42.3%)	1,679 (48.3%)
BUSINESS EDUCATION- 1986	*58 (81.7%)*	*2,659 (54.9%)*
OTHER LOCATION	3 (4.2%)	124 (3.6%)
OTHER LOCATION - 1986	*46 (64.8%)*	*199 (4.1%)*
UNACCOUNTED FOR		-119 (-3.4%)
UNACCOUNTED FOR - 1986		*70 (1.4%)*
TOTAL		**3,475 (100%)**
TOTAL - 1986		***4,842 (100%)***

GRAPH 21

Comparison of Actual (January 1, 1986) and Ideal Number of Microcomputers in Senior High Schools by Location



F. Specially Equipped Microcomputers - Senior High Schools

Respondents were asked to report the number of microcomputers they had in the school which had been specially equipped to generate French characters. A total of 6 of the 71 schools surveyed (8.5%) indicated that they had one or more microcomputers specially equipped to generate French characters. The total number of microcomputers equipped in this manner was 45 (0.9%). A total of 4 respondents (5.6%) indicated that they were planning to equip microcomputers to generate French characters during the current fiscal year. The number of microcomputers specially equipped with French characters which would be added in the current fiscal year was reported to be

44 (3.4% of the microcomputers planned for the current fiscal year). Respondents were asked to indicate what they believed to be the ideal number of microcomputers specially equipped with French characters for their school. A total of 22 schools (31.0%) indicated that, ideally, they should have one or more microcomputers specially equipped to generate French characters and, ideally, they indicated that the total number of microcomputers that should be so equipped was 201 (5.8%). The responses to questions involving microcomputers specially equipped to generate French characters are summarized in Table 61.

TABLE 61

Microcomputers Specially Equipped to
Generate French Characters - Senior High Schools

	NUMBER OF SCHOOLS	NUMBER OF COMPUTERS
Installed as of January 1, 1986	6 (8.5%)	45 (0.9%)
Number to be added this fiscal year	4 (5.6%)	44 (3.4%)
Total installed at end of this fiscal year	10 (14.1%)	89 (1.5%)
Ideal number	22 (31.0%)	201 (5.8%)

Respondents were also asked to report the number of microcomputers they had which had been specially equipped for use by physically disadvantaged students. A total of 4 of the 71 schools surveyed (5.6%) indicated that they had one or more microcomputers specially equipped for use by physically disadvantaged students. The total number of microcomputers equipped in this manner was 5 (0.1%). None of the respondents indicated that they were planning to equip microcomputers for use by physically

disadvantaged students during the current fiscal year. Respondents were asked to indicate what they believed to be the ideal number of microcomputers specially equipped for use by physically disadvantaged students for their school. A total of 18 schools (25.4%) indicated that, ideally, they should have one or more microcomputers specially equipped for use by physically disadvantaged students and, ideally, they indicated that the total number of microcomputers that should be so equipped was 53 (1.5%). The responses to questions involving microcomputers specially equipped for use by physically disadvantaged students are summarized in Table 62.

TABLE 62

Microcomputers Specially Equipped for Use by
Physically Disadvantaged Students - Senior High Schools

	NUMBER OF SCHOOLS	NUMBER OF COMPUTERS
Installed as of January 1, 1986	4 (5.6%)	5 (0.1%)
Number to be added this fiscal year	0 (0.0%)	0 (0.0%)
Total installed at end of this fiscal year	4 (5.6%)	5 (0.1%)
Ideal number	18 (25.4%)	53 (1.5%)

G. Microcomputer Maintenance - Senior High Schools

Respondents were asked to indicate how they were currently handling microcomputer maintenance in their school. A total of 23 respondents (32.4%) indicated that maintenance was performed by a maintenance person at central office. It was interesting to note that 7% of the respondents indicated that maintenance was either performed by a teacher (4.2%) or by the computer

coordinator (2.8%). A summary of responses to the question of microcomputer maintenance is presented in Table 63.

TABLE 63

Microcomputer Maintenance - Senior High Schools

	NUMBER OF SCHOOLS	PERCENTAGE
Teacher	3	4.2%
Computer Coordinator	2	2.8%
Central Office Maintenance Person	23	32.4%
Local Commercial Shop	14	19.7%
Commercial Shop in Another City	17	24.0%
Other	3	4.2%
No Response	9	12.7%
TOTAL	**71**	**100.0%**

H. Access to Microcomputers - Senior High Schools

Respondents were asked to indicate the extent to which both students and teachers in their school had access to microcomputers in the school beyond normal class times. The results indicated that in 43 schools (60.6%), students have limited access to the microcomputers beyond normal class times, while in two schools (2.8%), students have no access to the microcomputers beyond normal class time. A total of 46 respondents (64.8%) indicated that teachers have easy access to the microcomputers beyond normal class time. The findings with respect to access to the microcomputers in the school are summarized in Table 64.

TABLE 64

Access to Microcomputers - Senior High Schools

	BY STUDENTS	BY TEACHERS
Easy access	24 (33.8%)	46 (64.8%)
Limited access	43 (60.6%)	25 (35.2%)
No access	2 (2.8%)	0 (0.0%)
No response	2 (2.8%)	0 (0.0%)
TOTAL	**71 (100.0%)**	**71 (100.0%)**

I. Keyboarding - Senior High Schools

Respondents were asked to indicate what emphasis they are now placing on keyboarding in their school by specifying the proportion of students in the school who are now taking one or more courses in keyboarding. The results indicated that in 31 schools (43.7%) between one fifth and two fifths of the students take a course in keyboarding. In three schools (4.2%), more than four fifths of the students take one or more courses in keyboarding. The findings with respect to the extent to which keyboarding is now being taught are summarized in Table 65.

TABLE 65

Extent to Which Keyboarding Courses
are Presently Being Taught - Senior High Schools

STUDENTS TAKING KEYBOARDING COURSES	NUMBER OF SCHOOLS	PERCENTAGE
less than one fifth	16	22.5%
between one fifth and two fifths	31	43.7%
between two fifths and three fifths	18	25.4%
between three fifths and four fifths	1	1.4%
more than four fifths	3	4.2%
no response	2	2.8%
TOTAL	**71**	**100.0%**

Respondents were also asked to indicate what emphasis they will place on keyboarding in their school during the next year by specifying the proportion of students in the school who will be taking one or more courses in keyboarding at that time. The results indicated that in 31 schools (43.7%) between one fifth and two fifths of the students will be taking a course in keyboarding next year. In three schools (4.2%) more than four fifths of the students will take one or more courses in keyboarding next year. The findings with respect to the extent to which keyboarding will be taught next year are summarized in Table 66.

TABLE 66

Extent to Which Keyboarding Courses
Will Be Taught - Senior High Schools

STUDENTS TAKING KEYBOARDING COURSES	NUMBER OF SCHOOLS	PERCENTAGE
less than one fifth	10	14.1%
between one fifth and two fifths	31	43.7%
between two fifths and three fifths	17	24.0%
between three fifths and four fifths	5	7.0%
more than four fifths	3	4.2%
no response	5	7.0%
TOTAL	**71**	**100.0%**

Respondents were asked to indicate what emphasis they would place on keyboarding in their school in an ideal situation by specifying the proportion of students in the school who should be taking one or more courses in keyboarding. The results indicated that in 27 schools (31.0%) more than four fifths of the students should take one or more courses in keyboarding. The findings with respect to the extent to which keyboarding should be taught in an ideal situation are summarized in Table 67.

TABLE 67

Extent to Which Keyboarding Courses
Should Ideally Be Taught - Senior High Schools

KEYBOARDING COURSES	SCHOOLS	PERCENTAGE
less than one fifth	2	2.8%
between one fifth and two fifths	12	16.9%
between two fifths and three fifths	12	16.9%
between three fifths and four fifths	17	23.9%
more than four fifths	22	31.0%
no response	6	8.5%
TOTAL	**71**	**100.0%**

J. Administrative Uses of Microcomputers - Senior High Schools

Just under seventy percent of the schools reported having one or more microcomputers in the school administration office. In the next portion of the survey, respondents were asked to indicate the kinds of administrative software that was being used in the school. A summary of the results of this portion of the survey is presented in Table 68.

TABLE 68

Use of Microcomputers for Administrative Tasks - Senior High Schools

TYPE OF USE	NUMBER OF SCHOOLS
INTEGRATED SOFTWARE	21 (29.6%)
WORD PROCESSING SOFTWARE	47 (66.2%)
SPREADSHEET SOFTWARE	25 (35.2%)
DATA BASE MANAGEMENT SOFTWARE	25 (35.2%)
COMMUNICATIONS SOFTWARE	17 (23.9%)
SCHOOL SCHEDULING SOFTWARE	31 (43.7%)
GRADE/ATTENDANCE RECORDING	34 (47.9%)
SCHOOL ACCOUNTING	15 (21.1%)
SCHOOL TIMETABLING	33 (46.5%)
SCHOOL BUS SCHEDULING	0 (0.0%)

The administrative task for which most schools have begun using microcomputers is word processing. Almost every school (95.9%) that is using microcomputers for administrative purposes is using word processing software.

Respondents were also asked to indicate which administrative software packages they expected to be using next year, and which software packages they "should" be using. Most respondents (14.1%) indicated that they expected to be using scheduling and accounting software for administrative purposes next year. The greatest proportion of respondents (just under 30%) indicated that they "should" be using communication software and school

accounting software. The summary of responses to these questions is presented in Table 69 .

TABLE 69

Expected Use of Software for Administrative Tasks Next Year and Perception of Software That Should Be Used for Administrative Tasks - Senior High Schools

TYPE OF USE	NUMBER OF SCHOOLS will use	should use
INTEGRATED SOFTWARE	7 (9.9%)	11 (15.4%)
WORD PROCESSING SOFTWARE	3 (4.2%)	7 (9.9%)
SPREADSHEET SOFTWARE	7 (9.9%)	11 (15.4%)
DATA BASE MANAGEMENT SOFTWARE	4 (5.6%)	12 (16.9%)
COMMUNICATIONS SOFTWARE	3 (4.2%)	14 (19.7%)
SCHOOL SCHEDULING SOFTWARE	10 (14.1%)	6 (8.4%)
GRADE/ATTENDANCE RECORDING	8 (11.3%)	7 (9.9%)
SCHOOL ACCOUNTING	10 (14.1%)	14 (19.7%)
SCHOOL TIMETABLING	7 (9.9%)	7 (9.9%)
SCHOOL BUS SCHEDULING	1 (1.4%)	7 (9.9%)

K. Microcomputer-Related Training for Teachers - Senior High Schools

The survey included a number of items dealing with teacher training as it relates to the use of microcomputers. First, respondents were asked to estimate the proportion of their staff who had received training in the use of microcomputers in education as a result of various options. The type of training that was made available to most staff was participation in one university course. The type of training that was made available to least staff

was school workshops. Table 70 shows the various types of training considered and the proportion of responses to each.

TABLE 70

Staff Training in the Use of Microcomputers - Senior High Schools

TYPE OF TRAINING	NUMBER OF SCHOOLS IN WHICH MOST teachers trained by	SOME teachers trained by	NO teachers trained by
SCHOOL WORKSHOPS	17 (23.9%)	47 (66.2%)	2 (2.8%)
DISTRICT-SPONSORED WORKSHOPS	3 (4.2%)	58 (81.7%)	4 (5.6%)
ONE UNIVERSITY OR COLLEGE COURSE	0 (0.0%)	62 (87.3%)	2 (2.8%)
TWO UNIVERSITY OR COLLEGE COURSES	1 (1.4%)	55 (77.5%)	5 (7.0%)
THREE OR MORE UNIV. OR COLLEGE COURSES	0 (0.0%)	51 (71.8%)	9 (12.7%)
OTHER FORMAL TRAINING	0 (0.0%)	22 (31.0%)	10 (14.1%)
SELF-TAUGHT	3 (4.2%)	62 (87.3%)	0 (0.0%)

Respondents were asked to indicate what additional training their staff needed in the field of microcomputing. The results indicated that the greatest need for additional training was in the use of productivity software and integration of computers into the curriculum.

TABLE 71

Additional Training Needs in the Use of Microcomputers - Senior High Schools

TYPE OF TRAINING	NUMBER OF SCHOOLS IN WHICH MOST teachers need	SOME teachers need	NO teachers need
INTRODUCTORY COMPUTER LITERACY	16 (22.5%)	36 (50.7%)	7 (9.9%)
USING PRODUCTIVITY SOFTWARE	47 (66.2%)	19 (26.8%)	0 (0.0%)
COMPUTER PROGRAMMING	6 (8.4%)	32 (45.1%)	19 (26.8%)
INTEGRATION OF COMPUTERS IN THE CURRICULUM	53 (74.6%)	16 (22.5%)	0 (0.0%)
OTHER	2 (2.8%)	2 (2.8%)	0 (0.0%)

Respondents were asked to indicate an opinion concerning the minimum amount of pre-service training needs of teachers in the field of computing. Most respondents (28, 39.4%) indicated that a minimum of one university or college course would be sufficient, while 19 (26.8%) indicated that a minimum of two university or college courses would be required. Just under 15 percent (10, 14.1%) indicated that the minimum requirement was three or more university or college courses. An overwhelming 57 (80.3%) of the respondents indicated that they believed that pre-service teachers needed training in the integration of microcomputer uses in the "teaching methods" courses.

L. Buildings and Facilities - Senior High Schools

The final section in the survey asked respondents to rate a series of statements that described potential problem areas related to school facilities for microcomputers. Each statement was rated in terms of three levels of importance, low, medium and high. The problem that was considered to be a high level problem by the greatest proportion of respondents was one that dealt with procuring and maintaining software. Table 72 presents a summary of the responses to all of the items in this portion of the survey.

TABLE 72

Problems Related to Buildings and Facilities - Senior High Schools

PROBLEM AREA	LEVEL OF IMPORTANCE LOW	MEDIUM	HIGH
APPROPRIATE LOCATION FOR MICROCOMPUTERS	38 (53.5%)	16 (22.5%)	15 (21.1%)
ADEQUATE ACCESS TO MICROCOMPUTERS	30 (42.3%)	15 (21.1%)	24 (33.8%)
APPROPRIATE SPATIAL LAYOUT FOR MICROCOMPUTER FACILITY	33 (46.5%)	20 (28.2%)	14 (19.7%)
ADEQUATE ENVIRONMENTAL CONDITIONS FOR MICROS	29 (40.8%)	19 (26.8%)	20 (28.2%)
ADEQUATE PHYSICAL SECURITY FOR MICROS	23 (32.4%)	22 (31.0%)	24 (33.8%)
PROVIDING STORAGE FOR MICRO EQUIPMENT/SUPPLIES	27 (38.0%)	29 (40.8%)	13 (18.3%)
PROCURING ADEQUATELY DESIGNED WORKSTATIONS	31 (43.7%)	22 (31.0%)	15 (21.1%)
PROVIDING TELECOMMUNICATION LINKS	25 (35.2%)	22 (31.0%)	22 (31.0%)
PROVIDING DISPLAY MONITORS FOR CLASSROOM DEMOS	24 (33.8%)	22 (31.0%)	23 (32.4%)
MEETING POWER REQUIREMENTS FOR MICROS	43 (60.6%)	14 (19.7%)	11 (15.5%)
MAINTAINING MICROS	14 (19.7%)	27 (38.0%)	28 (39.4%)
PROCURING AND MAINTAINING SOFTWARE	5 (7.0%)	18 (25.4%)	47 (66.2%)
OTHER	0 (0.7%)	0 (1.1%)	10 (14.1%)

VII. FINDINGS - MIXED DIVISIONAL SCHOOLS

A. Description of Mixed Divisional Schools

A total of 589 of the schools participating in this survey were categorized as mixed divisional schools. These included schools from categories 4, 5, and 6. The student population in these schools was 151,483 (36.3%) and the teacher population was 9,340 (38.9%).

B. Computer Coordinators - Mixed Divisional Schools

Respondents from the mixed divisional schools were asked to indicate whether their school had an individual who had been identified as the computer coordinator by providing his or her name and telephone number on the survey response form. A total of 420 of the 589 mixed divisional school respondents (71.2%) provided the name of the computer coordinator in the school. This result is considerably lower than the corresponding result for all of the schools surveyed which was 77.2%.

C. Teachers Using Computers - Mixed Divisional Schools

Respondents in the mixed divisional schools surveyed were asked to list the names of teachers in their school who, in their opinion, were making "extensive use" of computers in their classrooms. A total of 407 of the 589 mixed divisional school respondents (69.1%) indicated that there was at least one teacher in the school who was making "extensive use" of computers in the classroom. This finding compares favourably to the corresponding result

obtained from all schools surveyed which was 71.9%. The total number of teachers in all mixed divisional schools who were identified as making "extensive use" of computers in the classroom was 985 (10.5% of the teachers in the mixed divisional schools surveyed). This finding is slightly higher than the corresponding result obtained from all schools surveyed (9.9%).

D. Number of Microcomputers - Mixed Divisional Schools

The total number of microcomputers reported by these schools was 8,979. This is an increase of 2,674 (42.4%) compared to the number of microcomputers reported in January of 1985. This brings the ratio of students to microcomputers in the mixed divisional schools down to 16.9:1 from a ratio of 22.0:1 reported one year ago. Respondents in this category indicated that they were planning to purchase an additional 1,501 microcomputers during the next fiscal year. Should these purchases occur, then the total number of microcomputers in the mixed divisional schools would increase to 10,480, bringing the ratio of students to microcomputers down to 14.5:1. The average number of microcomputers per mixed divisional school is 15.2 compared to the average across all schools which is 15.3 per school. The average number of mixed divisional school teachers per microcomputer is 1.0:1 while the corresponding number across all schools is 1.2:1. Table 73 shows a complete breakdown of the number of microcomputers in mixed divisional schools as well as the number of microcomputers that schools plan to purchase during the current year by brand category. Graph 22 shows a comparison of the number of microcomputers in mixed divisional schools by brand category reported in two consecutive surveys, January 1, 1985 and January 1, 1986.

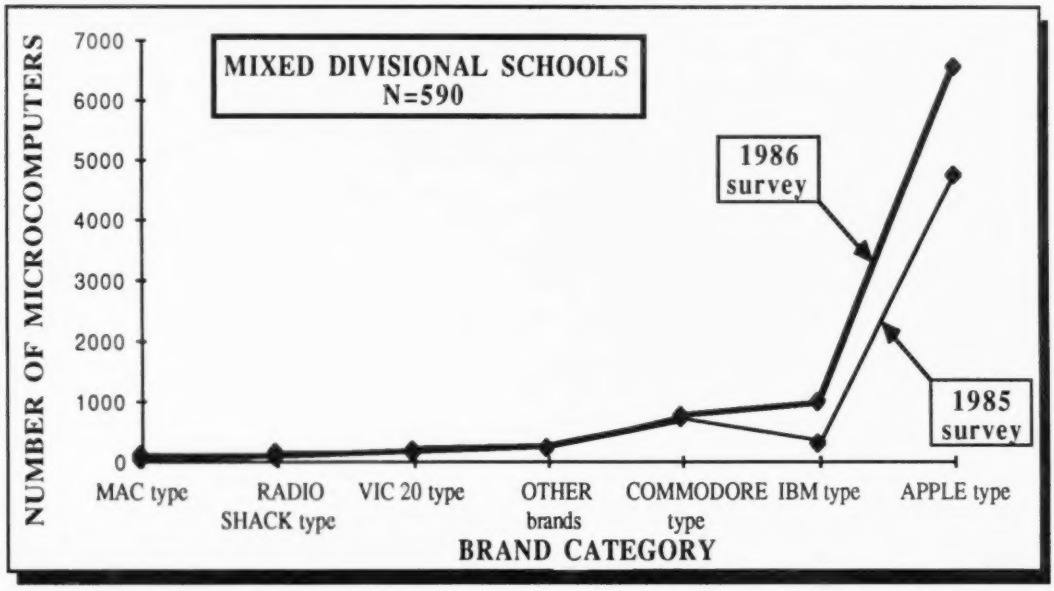
TABLE 73

Number of Microcomputers in Alberta
Mixed Divisional Schools

BRAND CATEGORY	NUMBER REPORTED	NUMBER PLANNED (NEXT FISCAL YEAR)
APPLE type	6,569 (72.8%)	1,032 (68.7%)
MAC type	116 (1.3%)	31 (2.1%)
COMMODORE type	758 (8.4%)	20 (1.3%)
VIC 20 type	154 (1.7%)	0 (0%)
IBM type	1,035 (11.5%)	378 (25.2%)
RADIO SHACK type	142 (1.6%)	7 (0.5%)
OTHER BRANDS	246 (2.7%)	33 (2.2%)
TOTAL	**9,020 (100%)**	**1,501 (100%)**

GRAPH 22

Microcomputers in Mixed Divisional Schools by Brand Category
1985 and 1986



Respondents were asked to indicate what they believed would be the "ideal" number of microcomputers for their institution. Respondents indicated that ideally, the total number of microcomputers required in mixed divisional schools was 9,691. This is only slightly higher than the 8,979 microcomputers that were reported in mixed divisional schools on January 1, 1986. According to the responses to this part of the survey, respondents feel that the ideal ratio of students to microcomputers at the elementary level would be 15.7:1. Table 74 presents a summary of elementary school respondents' opinions concerning the "ideal" number of microcomputers in mixed divisional schools by brand category. Graph 23 shows a comparison of the number of microcomputers reported in mixed divisional schools on January 1, 1986 and the ideal number of microcomputers required for mixed divisional schools by brand category.

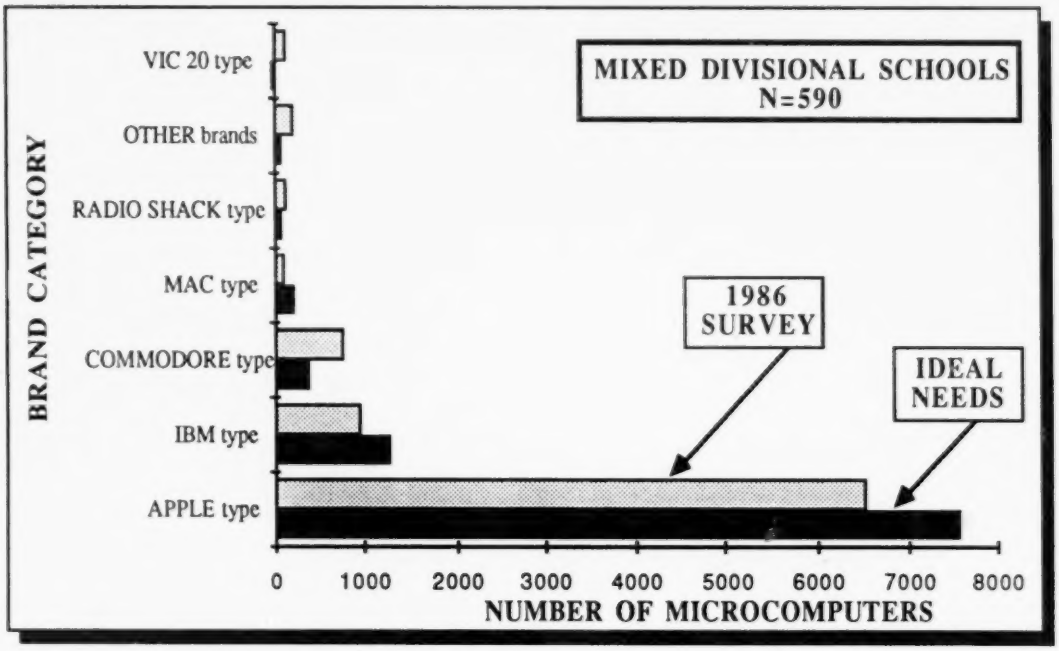
TABLE 74

Ideal Number of Microcomputers Required
in Mixed Divisional Schools - January 1986

BRAND CATEGORY	NUMBER	% OF MARKET
APPLE type	7,584	78.3%
MAC type	218	2.2%
COMMODORE type	387	4.0%
VIC 20 type	34	0.4%
IBM type	1,277	13.2%
RADIO SHACK type	102	1.0%
OTHER BRANDS	89	0.9%
TOTAL	**9,691**	**100.0%**

GRAPH 23

Comparison of Actual (January 1, 1986) and Ideal Number of Microcomputers in Mixed Divisional Schools by Brand Category



APPLE type microcomputers have dominated the mixed divisional school market and all indications are that they will continue to dominate this market during the next fiscal year. Results indicated that 73.2% of all microcomputers in use at the mixed divisional school level on January 1, 1986 were APPLE type. The results of that portion of the survey which dealt with estimated purchases during the current fiscal year indicated that the proportion of new APPLE type microcomputers purchased during the current fiscal year would drop slightly to 68.8%. However, respondents also indicated that 78.3% of the 9,691 microcomputers ideally required for the 590 mixed divisional schools should be APPLE type.

Of the 590 schools that completed survey forms, 515 (87.3%) reported having one or more microcomputers in the school, while 75 schools (12.7%) had no microcomputers at all. This is somewhat lower than the corresponding result for all schools in the province which was 93.2%. This means that of 151,808 students attending 590 mixed divisional schools that participated in this survey, 2,286 students (1.5%) attended schools that did not have any microcomputers.

E. Location of Microcomputers - Mixed Divisional Schools

The next section of the survey sought to determine where microcomputers in mixed divisional schools were typically housed. Seven distinct areas of the school were identified and respondents were asked to indicate the number of microcomputers housed in each of the seven areas. An eighth category ("OTHER LOCATION") was added to provide for those cases that did not appear to be included in the other seven areas. While most respondents completed this portion of the survey, in some cases the total number of microcomputers accounted for in this portion of the survey did not agree with the number specified in a previous portion of the survey (in which respondents were asked to indicate the number of microcomputers located in the school by brand category). As a result, there is a small difference (4.1%) between the totals reported in these two portions of the survey. The results of this portion of the survey are summarized in Table 75. Graph 24 depicts the number of microcomputers housed in each of the areas on January 1, 1986 together with the number of mixed divisional schools reporting microcomputers in each of the areas.

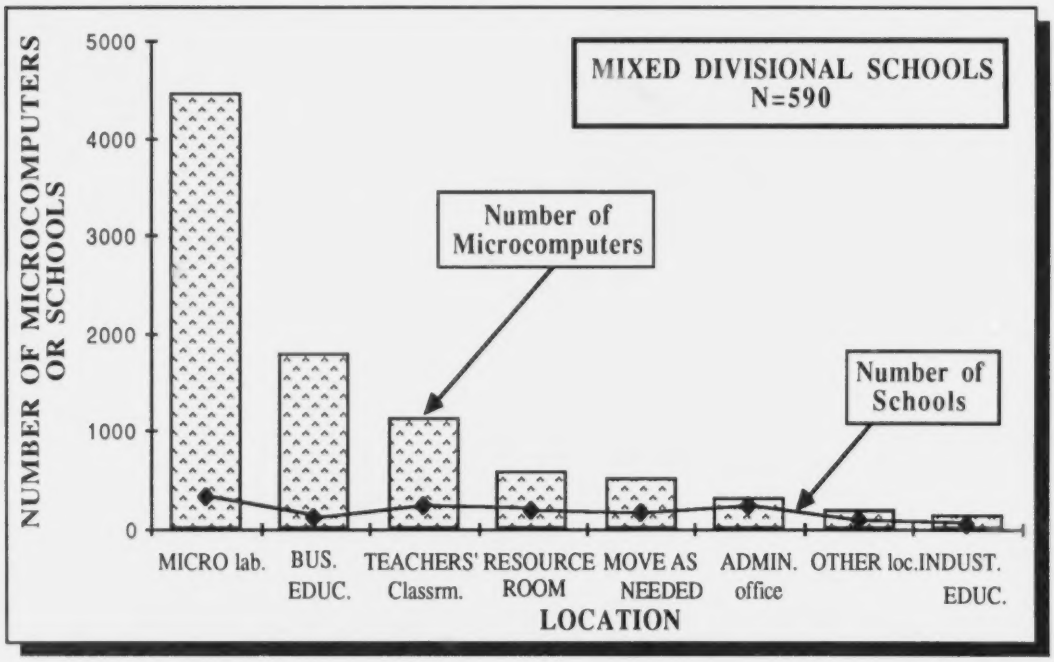
TABLE 75

Location of Microcomputers in Mixed Divisional Schools

LOCATION	NUMBER OF SCHOOLS	NUMBER OF MICROCOMPUTERS
MICRO LAB.	333 (51.0%)	4,453 (49.4%)
RESOURCE ROOM	206 (31.5%)	590 (6.5%)
ADMIN. OFFICE	255 (39.1%)	322 (3.6%)
TEACHERS' CLASSROOMS	249 (38.1%)	1,122 (12.4%)
MOVE AS NEEDED	175 (26.8%)	511 (5.7%)
INDUSTRIAL EDUC. LAB	54 (8.3%)	146 (1.6%)
BUSINESS EDUC.	116 (17.8%)	1,800 (20.0%)
OTHER LOCATION	92 (14.1%)	203 (2.2%)
UNACCOUNTED FOR		-127 (-1.4%)
TOTAL		**9,020 (100%)**

GRAPH 24

Location of Microcomputers in Mixed Divisional Schools



The largest proportion of microcomputers (49.6%) seem to be located in microcomputer laboratories and 51.0% of the 590 elementary schools surveyed reported having a microcomputer laboratory. From the data in Table 75, it would appear that the average microcomputer laboratory contains just over 13 microcomputers.

Respondents were also asked to indicate the intended physical location of the additional microcomputers they planned to purchase during the next fiscal year. Table 76 presents the findings of this portion of the survey. Quantities indicated in italics represent the total number of microcomputers

available at each physical location on January 1, 1986 and are included for comparison purposes only.

TABLE 76

Planned Location of Microcomputers to be Purchased by Mixed Divisional Schools During 1986 *(January 1986 Figures Shown in Italics)*

LOCATION	NUMBER OF SCHOOLS	NUMBER OF MICROCOMPUTERS
MICRO LAB.	99 (15.2%)	431 (28.7%)
MICRO LAB.	*333 (51.0%)*	*4,453 (49.4%)*
RESOURCE ROOM	41 (6.3%)	67 (4.5%)
RESOURCE ROOM	*206 (31.5%)*	*590 (6.5%)*
ADMIN. OFFICE	41 (6.3%)	45 (3.0%)
ADMIN. OFFICE	*255 (39.1%)*	*322 (3.6%)*
TEACHERS' CLASSROOMS	66 (10.1%)	244 (16.3%)
TEACHERS' CLASSROOMS	*249 (38.1%)*	*1,122 (12.4%)*
MOVE AS NEEDED	38 (5.8%)	94 (6.3%)
MOVE AS NEEDED	*175 (26.8%)*	*511 (5.7%)*
INDUSTRIAL EDUC. LAB	4 (0.6%)	12 (0.8%)
INDUSTRIAL EDUC. LAB	*54 (8.3%)*	*146 (1.6%)*
BUSINESS EDUC.	51 (7.8%)	523 (34.8%)
BUSINESS EDUC.	*116 (17.8%)*	*1,800 (20.0%)*
OTHER LOCATION	9 (1.4%)	23 (1.5%)
OTHER LOCATION	*92 (14.1%)*	*203 (2.2%)*
UNACCOUNTED FOR		62 (4.1%)
UNACCOUNTED FOR		*-127 (-1.4%)*
TOTAL		**1,501 (100%)**
TOTAL - 1986		***9,020 (100%)***

Respondents were also asked to indicate the ideal numbers of microcomputers in each of the physical locations. The results of these responses are presented in Table 77. Graph 25 illustrates the comparison

between the actual number of microcomputers reported in mixed divisional schools on January 1, 1986 and the ideal number of microcomputers required in these schools. These results indicate that, ideally, the largest proportion of microcomputers in mixed divisional schools (46.1%) should be located in a general purpose microcomputer laboratory while the second largest proportion (17.1%) should be located in the business education laboratory.

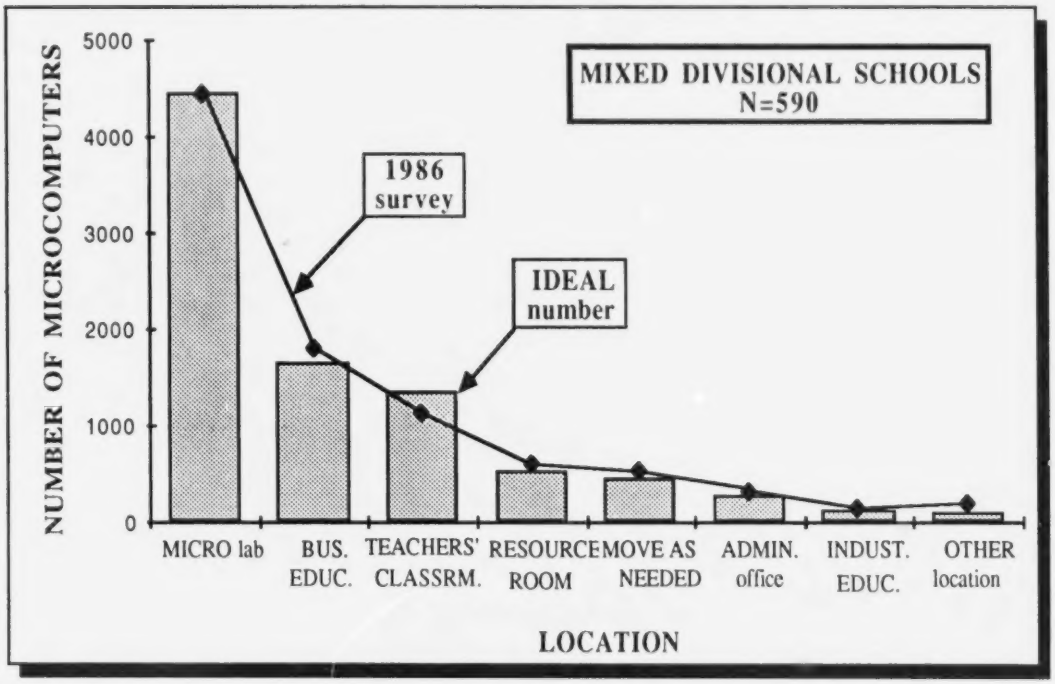
TABLE 77

Ideal Location of Microcomputers in Mixed Divisional Schools
(January 1986 Figures Shown in Italics)

LOCATION	NUMBER OF SCHOOLS	NUMBER OF MICROCOMPUTERS
MICRO LAB.	230 (35.2%)	4,464 (46.0%)
MICRO LAB. - 1986	*333 (51.0%)*	*4,453 (49.6%)*
RESOURCE ROOM	174 (26.6%)	513 (5.3%)
RESOURCE ROOM	*206 (31.5%)*	*590 (6.6%)*
ADMIN. OFFICE	198 (30.3%)	279 (2.9%)
ADMIN. OFFICE	*255 (39.1%)*	*322 (3.6%)*
TEACHERS' CLASSROOMS	162 (24.8%)	1,344 (13.9%)
TEACHERS' CLASSROOMS	*249 (38.1%)*	*1122 (12.5%)*
MOVE AS NEEDED	102 (15.6%)	457 (4.7%)
MOVE AS NEEDED	*175 (26.8%)*	*511 (5.7%)*
INDUSTRIAL EDUC. LAB	39 (6.0%)	122 (1.3%)
INDUSTRIAL EDUC. LAB	*54 (8.3%)*	*146 (1.6%)*
BUSINESS EDUC.	78 (11.9%)	1,658 (17.1%)
BUSINESS EDUC.	*116 (17.8%)*	*1800 (20.0%)*
OTHER LOCATION	49 (7.5%)	92 (0.9%)
OTHER LOCATION	*92 (14.1%)*	*203 (2.3%)*
UNACCOUNTED FOR		762 (7.9%)
UNACCOUNTED FOR		*-168 (1.9%)*
TOTAL		**9,691(100%)**
TOTAL - 1986		***8,979(100%)***

GRAPH 25

Comparison of Actual (January 1, 1986) and Ideal Number of Microcomputers in Mixed Divisional Schools by Location



F. Specially Equipped Microcomputers - Mixed Divisional Schools

Respondents were asked to report the number of microcomputers they had in the school which had been specially equipped to generate French characters. A total of 59 of the 589 schools surveyed (10.0%) indicated that they had one or more microcomputers specially equipped to generate French characters. The total number of microcomputers equipped in this manner was 446 (4.9%). A total of 37 respondents (6.3%) indicated that they were planning to equip microcomputers to generate French characters during the current fiscal year. The number of microcomputers specially equipped with French characters which would be added in the current fiscal year was reported

to be 251 (16.7% of the microcomputers planned for the current fiscal year). Respondents were asked to indicate what they believed to be the ideal number of microcomputers specially equipped with French characters for their school. A total of 110 schools (18.7%) indicated that, ideally, they should have one or more microcomputers specially equipped to generate French characters and, ideally, they indicated that the total number of microcomputers that should be so equipped was 999 (10.3%). The responses to questions involving microcomputers specially equipped to generate French characters are summarized in Table 78.

TABLE 78

Microcomputers Specially Equipped to
Generate French Characters - Mixed Divisional Schools

	NUMBER OF SCHOOLS	NUMBER OF COMPUTERS
Installed as of January 1, 1986	59 (10.0%)	446 (4.9%)
Number to be added this fiscal year	37 (6.3%)	251 (16.7%)
Total installed at end of this fiscal year	96 (16.3%)	697 (6.6%)
Ideal number	110 (18.7%)	999 (10.3%)

Respondents were also asked to report the number of microcomputers they had in the school which had been specially equipped for use by physically disadvantaged students. A total of 20 of the 589 schools surveyed (3.4%) indicated that they had one or more microcomputers specially equipped for use by physically disadvantaged students. The total number of microcomputers equipped in this manner was 26 (0.3%). A total of 3 respondents (0.5%) indicated that they were planning to equip microcomputers for use by physically disadvantaged students during the current fiscal year. The number of microcomputers specially equipped for use by physically disadvantaged

students which would be added in the current fiscal year was reported to be 4 (0.3% of the microcomputers planned for the current fiscal year). Respondents were asked to indicate what they believed to be the ideal number of microcomputers specially equipped for use by physically disadvantaged students for their school. A total of 84 schools (14.3%) indicated that, ideally, they should have one or more microcomputers specially equipped for use by physically disadvantaged students and, ideally, they indicated that the total number of microcomputers that should be so equipped was 167 (1.7%). The responses to questions involving microcomputers specially equipped for use by physically disadvantaged students are summarized in Table 79.

TABLE 79

Microcomputers Specially Equipped for Use by
Physically Disadvantaged Students - Mixed Divisional Schools

	NUMBER OF SCHOOLS	NUMBER OF COMPUTERS
Installed as of January 1, 1986	20 (3.4%)	26 (0.3%)
Number to be added this fiscal year	3(0.5%)	4 (0.3%)
Total installed at end of this fiscal year	23 (3.9%)	30 (0.3%)
Ideal number	84 (14.3%)	167 (1.7%)

G. Microcomputer Maintenance - Mixed Divisional Schools

As the number of microcomputers in schools increases, and particularly as teachers begin to integrate microcomputers into their instruction, the problem of maintenance must be faced. Respondents were asked to indicate how they were currently handling microcomputer maintenance in their school.

A total of 184 respondents (31.3%) indicated that maintenance was performed by a non-local shop. It was interesting to note that more than 10% of the respondents indicated that maintenance was either performed by a teacher (8.3%) or by the computer coordinator (3.2%). A summary of responses to the question of microcomputer maintenance is presented in Table 80.

TABLE 80

Microcomputer Maintenance - Mixed Divisional Schools

	NUMBER OF SCHOOLS	PERCENTAGE
Teacher	49	8.3%
Computer Coordinator	19	3.2%
Central Office Maintenance Person	135	22.9%
Local Commercial Shop	55	9.3%
Commercial Shop in Another City	184	31.3%
Other	23	3.9%
No Response	124	21.1%
TOTAL	**589**	**100.0%**

H. Access to Microcomputers - Mixed Divisional Schools

Respondents were asked to indicate the extent to which both students and teachers in their school had access to microcomputers in the school beyond normal class times. The results indicated that in 335 schools (56.9%), students have limited access to the microcomputers beyond normal class times while in 36 schools (6.1%), students have no access to the microcomputers beyond

normal class time. A total of 334 respondents (56.7%) indicated that teachers have easy access to the microcomputers beyond normal class time. The findings with respect to access to the microcomputers in the school are summarized in Table 81.

TABLE 81

Access to Microcomputers - Mixed Divisional Schools

	BY STUDENTS	BY TEACHERS
Easy access	134 (22.7%)	334 (56.7%)
Limited access	335 (56.9%)	156 (26.5%)
No access	36 (6.1%)	11 (1.9%)
No response	84 (14.3%)	88 (14.9%)
TOTAL	**589(100.0%)**	**589(100.0%)**

I. Keyboarding - Mixed Divisional Schools

Respondents were asked to indicate what emphasis they are now placing on keyboarding in their school by specifying the proportion of students in the school who are now taking one or more courses in keyboarding. The results indicated that in 229 schools (38.9%) less than one fifth of the students take a course in keyboarding. In 26 schools (4.4%), more than four fifths of the students take one or more courses in keyboarding. The findings with respect to the extent to which keyboarding is now being taught are summarized in Table 82.

TABLE 82

Extent to Which Keyboarding Courses
are Presently Being Taught - Mixed Divisional Schools

STUDENTS TAKING KEYBOARDING COURSES	NUMBER OF SCHOOLS	PERCENT
less than one fifth	229	38.9%
between one fifth and two fifths	158	26.8%
between two fifths and three fifths	70	11.9%
between three fifths and four fifths	15	2.6%
more than four fifths	26	4.4%
no response	91	15.4%
TOTAL	**589**	**100.0%**

Respondents were also asked to indicate what emphasis they will place on keyboarding in their school during the next year by specifying the proportion of students in the school who will be taking one or more courses in keyboarding at that time. The results indicated that in 183 schools (31.1%) between two fifths and four fifths of the students will be taking a course in keyboarding next year. In 32 schools (5.4%), more than four fifths of the students will take one or more courses in keyboarding next year. The findings with respect to the extent to which keyboarding will be taught next year are summarized in Table 83.

TABLE 83

Extent to Which Keyboarding Courses
Will Be Taught - Mixed Divisional Schools

STUDENTS TAKING KEYBOARDING COURSES	NUMBER OF SCHOOLS	PERCENT
less than one fifth	139	23.6%
between one fifth and two fifths	183	31.1%
between two fifths and three fifths	101	17.2%
between three fifths and four fifths	39	6.6%
more than four fifths	32	5.4%
no response	95	16.1%
TOTAL	**589**	**100.0%**

Respondents were asked to indicate what emphasis they would place on keyboarding in their school in an ideal situation by specifying the proportion of students in the school who should be taking one or more courses in keyboarding. The results indicated that in 180 schools (30.6%) more than four fifths of the students should take one or more courses in keyboarding. The findings with respect to the extent to which keyboarding should be taught in an ideal situation are summarized in Table 84.

TABLE 84

Extent to Which Keyboarding Courses
Should Ideally Be Taught - Mixed Divisional Schools

STUDENTS TAKING KEYBOARDING COURSES	NUMBER OF SCHOOLS	PERCENT
less than one fifth	32	5.4%
between one fifth and two fifths	83	14.1%
between two fifths and three fifths	109	18.5%
between three fifths and four fifths	88	14.9%
more than four fifths	180	30.6%
no response	97	16.5%
TOTAL	**589**	**100.0%**

J. Administrative Uses of Microcomputers - Mixed Divisional Schools

Just over forty-three percent of the schools reported having one or more microcomputers in the school administration office. In the next portion of the survey, respondents were asked to indicate the kinds of administrative software that was being used in the school. A summary of the results of this portion of the survey is presented in Table 85.

TABLE 85

Use of Microcomputers for Administrative Tasks - Mixed Divisional Schools

TYPE OF USE	NUMBER OF SCHOOLS
INTEGRATED SOFTWARE	157 (26.6%)
WORD PROCESSING SOFTWARE	229 (38.8%)
SPREADSHEET SOFTWARE	126 (21.4%)
DATA BASE MANAGEMENT SOFTWARE	127 (21.5%)
COMMUNICATIONS SOFTWARE	42 (7.1%)
SCHOOL SCHEDULING SOFTWARE	29 (4.9%)
GRADE/ATTENDANCE RECORDING	136 (23.1%)
SCHOOL ACCOUNTING	68 (11.5%)
SCHOOL TIMETABLING	29 (4.9%)
SCHOOL BUS SCHEDULING	10 (1.7%)

The administrative task for which most schools have begun using microcomputers is word processing. Almost every school (96.9%) that is using microcomputers for administrative purposes is using word processing software.

Respondents were also asked to indicate which administrative software packages they expected to be using next year, and which software packages they "should" be using. Most respondents (28.5%) indicated that they expected to be using word processing software for administrative purposes next year. The greatest proportion of respondents (just over 30%) indicated that they "should" be using grade/attendance recording software and school

accounting software. The summary of responses to these questions is presented in Table 86.

TABLE 86

Expected Use of Software for Administrative Tasks Next Year
and Perception of Software That Should Be Used
for Administrative Tasks - Mixed Divisional Schools

TYPE OF USE	NUMBER OF SCHOOLS will use	should use
INTEGRATED SOFTWARE	326 (55.3%)	484 (82.0%)
WORD PROCESSING SOFTWARE	477 (80.8%)	674 (114.2%)
SPREADSHEET SOFTWARE	275 (46.6%)	435 (73.7%)
DATA BASE MANAGEMENT SOFTWARE	283 (48.0%)	425 (72.0%)
COMMUNICATIONS SOFTWARE	122 (20.7%)	256 (43.4%)
SCHOOL SCHEDULING SOFTWARE	105 (17.8%)	261 (44.2%)
GRADE/ATTENDANCE RECORDING	297 (50.3%)	466 (79.0%)
SCHOOL ACCOUNTING	189 (32.0%)	386 (65.4%)
SCHOOL TIMETABLING	103 (17.5%)	287 (48.6%)
SCHOOL BUS SCHEDULING	29 (4.9%)	85 (14.4%)

K. Microcomputer-Related Training for Teachers - Mixed Divisional Schools

The survey included a number of items dealing with teacher training as it relates to the use of microcomputers. First, respondents were asked to estimate the proportion of their staff who had received training in the use of microcomputers in education as a result of various options. The type of training that was made available to most staff was participation in school workshops. The type of training that was made available to least staff was

training that was the result of three or more university or college courses. Table 87 shows the various types of training considered and the proportion of responses to each.

TABLE 87

Staff Training in the Use of Microcomputers - Mixed Divisional Schools

TYPE OF TRAINING	NUMBER OF SCHOOLS IN WHICH MOST teachers trained by	SOME teachers trained by	NO teachers trained by
SCHOOL WORKSHOPS	223 (37.8%)	219 (37.1%)	48 (8.1%)
DISTRICT-SPONSORED WORKSHOPS	104 (17.6%)	329 (55.8%)	52 (8.8%)
ONE UNIVERSITY OR COLLEGE COURSE	14 (2.4%)	383 (64.9%)	61 (10.3%)
TWO UNIVERSITY OR COLLEGE COURSES	4 (0.7%)	258 (43.7%)	170 (28.8%)
THREE OR MORE UNIV. OR COLLEGE COURSES	2 (0.3%)	99 (16.8%)	303 (51.4%)
OTHER FORMAL TRAINING	8 (1.4%)	91 (15.4%)	192 (32.5%)
SELF-TAUGHT	73 (12.4%)	370 (62.7%)	26 (4.4%)

Respondents were asked to indicate what additional training their staff needed in the field of microcomputing. The results indicated that the greatest need for additional training was in the use of productivity software and integration of computers into the curriculum.

TABLE 88

Additional Training Needs in the Use of Microcomputers - Mixed Divisional Schools

TYPE OF TRAINING	NUMBER OF SCHOOLS IN WHICH MOST teachers trained by	SOME teachers trained by	NO teachers trained by
INTRODUCTORY COMPUTER LITERACY	149 (25.3%)	255 (43.2%)	42 (7.1%)
USING PRODUCTIVITY SOFTWARE	313 (53.1%)	164 (27.8%)	11 (1.9%)
COMPUTER PROGRAMMING	106 (18.0%)	240 (40.7%)	90 (15.3%)
INTEGRATION OF COMP. IN THE CURRICULUM	387 (65.6%)	117 (19.8%)	5(0.8%)
OTHER	17 (2.9%)	9 (1.5%)	10 (1.7%)

Respondents were asked to indicate an opinion concerning the minimum amount of pre-service training needs of teachers in the field of computing. Most respondents (182, 30.8%) indicated that a minimum of one university or college course would be sufficient, while 130 (22.0%) indicated that a minimum of two university or college courses would be required. Less than ten percent (38, 6.4%) indicated that the minimum requirement was three or more university or college courses. An overwhelming 391 (66.3%) of the respondents indicated that they believed that pre-service teachers needed training in the integration of microcomputer uses in the "teaching methods" courses.

L. Buildings and Facilities - Mixed Divisional Schools

The final section in the survey asked respondents to rate a series of statements that described potential problem areas related to school facilities for microcomputers. Each statement was rated in terms of three levels of importance, low, medium and high. The problem that was considered to be a high level problem by the greatest proportion of respondents was one that dealt with procuring and maintaining software. Table 89 presents a summary of the responses to all of the items in this portion of the survey.

TABLE 89

Problems Related to Buildings and Facilities - Mixed Divisional Schools

PROBLEM AREA	LEVEL OF IMPORTANCE LOW	MEDIUM	HIGH
APPROPRIATE LOCATION FOR MICROCOMPUTERS	242 (41.0%)	141 (23.9%)	121 (20.5%)
ADEQUATE ACCESS TO MICROCOMPUTERS	181 (30.7%)	168 (28.5%)	158 (26.8%)
APPROPRIATE SPATIAL LAYOUT FOR MICROCOMPUTER FACILITY	229 (38.8%)	164 (27.8%)	107 (18.1%)
ADEQUATE ENVIRONMENTAL CONDITIONS FOR MICROS	185 (31.4%)	195 (33.1%)	123 (20.8%)
ADEQUATE PHYSICAL SECURITY FOR MICROS	226 (38.3%)	139 (23.6%)	141 (23.9%)
PROVIDING STORAGE FOR MICRO EQUIPMENT/SUPPLIES	207 (35.1%)	165 (28.0%)	130 (22.0%)
PROCURING ADEQUATELY DESIGNED WORKSTATIONS	174 (29.5%)	175 (29.7%)	154 (26.1%)
PROVIDING TELECOMMUNICATION LINKS	270 (45.8%)	129 (21.9%)	104 (17.6%)
PROVIDING DISPLAY MONITORS FOR CLASSROOM DEMOS	182 (30.8%)	186 (31.5%)	137 (23.2%)
MEETING POWER REQUIREMENTS FOR MICROS	288 (48.8%)	114 (19.3%)	98 (16.6%)
MAINTAINING MICROS	137 (23.2%)	180 (30.5%)	189 (32.0%)
PROCURING AND MAINTAINING SOFTWARE	46 (7.8%)	143 (24.2%)	322 (54.6%)
OTHER	5 (0.8%)	5 (0.8%)	24 (4.1%)

VIII. FINDINGS - URBAN AND RURAL SCHOOLS

A. Description of Urban and Rural Schools

Nearly half of the population of Alberta is concentrated in two major cities, Edmonton and Calgary. The other half of the population is distributed amongst several smaller cities and a large number of towns and villages. The purpose of this portion of the study is to compare data obtained from respondents in the two major cities with data obtained from other parts of the province.

Edmonton and Calgary each have two major school jurisdictions; the public (Protestant) jurisdiction and the separate (Catholic) jurisdiction. For purposes of this study, these four jurisdictions will be referred to as urban jurisdictions and the schools contained within these urban jurisdictions will be referred to as urban schools. All other schools in the province will be referred to as rural schools.

The total number of urban schools surveyed was 496 (36.9%), with 250 of these schools being in Edmonton and 246 being in Calgary. The total number of students in the urban schools surveyed was 193,751 (46.4%) with 92,223 of the students being in Edmonton and 101,528 students being in Calgary. The total number of teachers in the urban schools was 10,857 (45.2%) with 4,934 of the teachers being in Edmonton and 5,923 teachers being in Calgary.

The total number of rural schools surveyed was 946 (63.1%). The total number of students in the rural schools surveyed was 223,610 (53.6%) and the total number of teachers in these schools was 13,169 (54.8%).

B. Computer Coordinators - Urban and Rural Schools

Respondents from the urban and rural schools were asked to indicate whether their school had an individual who had been identified as the computer coordinator by providing his or her name and telephone number on the survey response form. A total of 401 of the 496 urban school respondents (80.8%) provided the name of the computer coordinator in the school while 638 of the 849 rural school respondents (75.1%) provided the name of the computer coordinator in the school. A total of 208 of the 250 respondents surveyed in Edmonton schools (83.2%) and 193 of the 246 respondents surveyed in Calgary schools (78.4%) provided the name of the computer coordinator in the school.

C. Teachers Using Computers - Urban and Rural Schools

Respondents in the urban and rural schools surveyed were asked to list the names of teachers in their schools who, in their opinion, were making "extensive use" of computers in their classrooms. A total of 369 of the 496 respondents (74.4%) in urban schools and 570 of the 849 respondents (67.1%) in rural schools indicated that there was at least one teacher in the school who was making "extensive use" of computers in the classroom. A total of 190 of the 250 respondents from Edmonton schools (76.0%) and 179 of the 246 respondents from Calgary schools (72.8%) indicated that there was

at least one teacher in the school who was making "extensive use" of computers in the classroom. The number of teachers in urban schools who were identified as making "extensive use" of computers in the classroom was 936 (8.6%) with 471 of these being in Edmonton (9.5%) and 465 being in Calgary (7.9%). The number of teachers in rural schools who were making "extensive use" of computers in the classroom was 1,452 (11.0%).

D. Number of Microcomputers - Urban and Rural Schools

The total number of microcomputers reported by urban schools was 8,465 (41.2% of the provincial installed base) with 4,078 (19.8%) in Edmonton and 4,387 (21.3%) in Calgary. The total number of microcomputers reported by rural schools was 12,086 (58.8% of the provincial installed base). These results indicate that while rural jurisdictions have 58.8% of the installed base of microcomputers in Alberta, they only serve 53.6% of Alberta's student population. In contrast, Edmonton schools have 19.8% and Calgary schools have 21.3% of the installed base of microcomputers in Alberta, yet they serve 22.1% and 24.3% of Alberta's student population respectively. Table 90 shows a complete breakdown of the number of microcomputers in urban and rural schools.

TABLE 90

Number of Microcomputers in
Urban and Rural Schools

BRAND CATEGORY	NUMBER OF MICROCOMPUTERS EDMONTON	CALGARY	URBAN	RURAL
APPLE type	2,767 (67.9%)	2,487 (56.6%)	5,254 (62.0%)	8,990 (74.3%)
MAC type	51 (1.2%)	3 (0.1%)	54 (0.6%)	143 (1.2%)
COMMODORE type	503 (12.3%)	376 (8.6%)	879 (10.4%)	1,026 (8.5%)
VIC 20 type	117 (2.9%)	24 (0.5%)	141 (1.7%)	118 (1.0%)
IBM type	489 (12.0%)	1,254 (28.6%)	1,743 (20.6%)	1,373 (11.4%)
RADIO SHACK type	54 (1.3%)	96 (2.2%)	150 (1.8%)	160 (1.3%)
OTHER BRANDS	97 (2.4%)	147 (3.4%)	244 (2.9%)	276 (2.3%)
TOTAL	**4,078**	**4,387**	**8,465**	**12,086**

Respondents from urban schools indicated that they were planning to purchase an additional 1,787 microcomputers during the next fiscal year (47.1% of total expected purchases in the province) with 750 of the 1,787 planned for Edmonton schools (19.8%) and the balance of 1,037 planned for Calgary schools (27.3%). Respondents in rural schools indicated that they were planning to purchase an additional 2,010 microcomputers (52.9% of total expected purchases in the province) during the next fiscal year.

In urban schools, the proportion of APPLE type microcomputers that schools expect to purchase is 43.2% while the proportion of APPLE type microcomputers in urban schools reported on January 1, 1986 was 62.0%. A similar trend was evident in rural schools where the proportion of APPLE type microcomputers that schools expect to purchase was 65.4% and the

proportion of APPLE type microcomputers in rural schools reported on January 1, 1986 was 74.4%. Both urban and rural schools reported that they expected to purchase a greater proportion of IBM type microcomputers during the current fiscal year. The proportion of IBM type microcomputers that urban schools expect to purchase is 48.3% while the proportion of IBM type microcomputers in urban schools reported on January 1, 1986 was 20.6%. In rural schools, the proportion of IBM type microcomputers that schools expect to purchase is 22.6% while the proportion of IBM type microcomputers in rural schools reported on January 1, 1986 was 11.4%.

While the number of Macintosh type microcomputers in Alberta schools remains quite small, the relative proportion of these microcomputers is increasing rapidly. In rural schools, the proportion of Macintosh type microcomputers that schools expect to purchase is 3.2% while the proportion of Macintosh type microcomputers in rural schools reported on January 1, 1986 was only 1.2%. The findings in Edmonton were similar, where the proportion of Macintosh type microcomputers that schools expect to purchase is 3.3%, while the proportion of Macintosh type microcomputers in rural schools reported on January 1, 1986 was only 1.3%. Calgary did not appear to follow this trend. In Calgary schools, the proportion of Macintosh type microcomputers that schools expect to purchase is only 0.2% while the proportion of Macintosh type microcomputers in Calgary schools reported on January 1, 1986 was 0.1%. Table 91 shows a complete breakdown of the number of microcomputers urban and rural schools plan to purchase during the current fiscal year. Quantities in italics represent the number of microcomputers reported on January 1, 1986 and are included in this table for comparison purposes only.

TABLE 91

Number of Microcomputers Planned for
Urban and Rural Schools - Next Fiscal Year
(January 1, 1986 Findings Shown in Italics)

BRAND CATEGORY	NUMBER OF MICROCOMPUTERS EDMONTON	CALGARY	URBAN	RURAL
APPLE type	328 (43.8%)	444 (42.8%)	772 (43.2%)	1,314 (65.4%)
APPLE type - 1986	*2,767 (67.9%)*	*2,487 (56.7%)*	*5,245 (62.0%)*	*8,990 (74.4%)*
MAC type	25 (3.3%)	2 (0.2%)	27 (1.5%)	65 (3.2%)
MAC type - 1986	*51 (1.3%)*	*3 (0.1%)*	*54 (0.6%)*	*143 (1.2%)*
COMMODORE type	28 (3.7%)	13 (1.3%)	41 (2.3%)	33 (1.6%)
COMMODORE type - 1986	*503 (12.3%)*	*376 (8.6%)*	*879 (10.4%)*	*1,026 (8.5%)*
VIC 20 type	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
VIC 20 type - 1986	*117 (2.9%)*	*24 (0.5%)*	*141 (1.7%)*	*118 (1.0%)*
IBM type	369 (49.2%)	494 (47.6%)	863 (48.3%)	555 (27.7%)
IBM type - 1986	*489 (12.0%)*	*1,254 (28.6%)*	*1,743 (20.6%)*	*1,373 (11.4%)*
RADIO SHACK type	0 (0.0%)	63 (6.1%)	63 (3.5%)	6 (0.3%)
RADIO SHACK type - 1986	*54 (1.3%)*	*96 (2.2%)*	*150 (1.8%)*	*160 (1.3%)*
OTHER BRANDS	0 (0.0%)	21 (2.0%)	21 (1.2%)	37 (1.8%)
OTHER BRANDS - 1986	*97 (2.4%)*	*147 (3.4%)*	*244 (2.9%)*	*276 (2.3%)*
TOTAL	**750**	**1,037**	**1,787**	**2,010**
TOTAL - 1986	***4,078***	***4,387***	***8,465***	***12,086***

Respondents were asked to indicate what they believed would be the "ideal" number of microcomputers for their institutions. Respondents from urban schools indicated that, ideally, the total number of microcomputers required in urban and rural schools was 11,109. Respondents from Edmonton schools reported that, ideally, the number of microcomputers they required was 4,284, while respondents from Calgary schools reported that, ideally, the number of microcomputers they required was 6,825. These results are not much higher than the number of microcomputers reported by these schools on January 1, 1986. The total number of microcomputers reported by

urban schools on January 1, 1986 was 8,474 (31.1% below the ideal). Most of this difference was attributable to Calgary (55.6% below the reported ideal), while Edmonton schools were only 5.1% below their reported ideal. Responses from rural schools indicated that, ideally, they required 13,787 microcomputers, which was 14.1% below the number of microcomputers reported in these schools on January 1, 1986. Table 92 presents a summary of urban and rural school responde...' opinions concerning the "ideal" number of microcomputers in urban and rural schools by brand category. Graphs 26 and 27 show a comparison between the number of microcomputers reported in urban and rural schools on January 1, 1986 and the ideal number of microcomputers required for urban and rural schools by brand category.

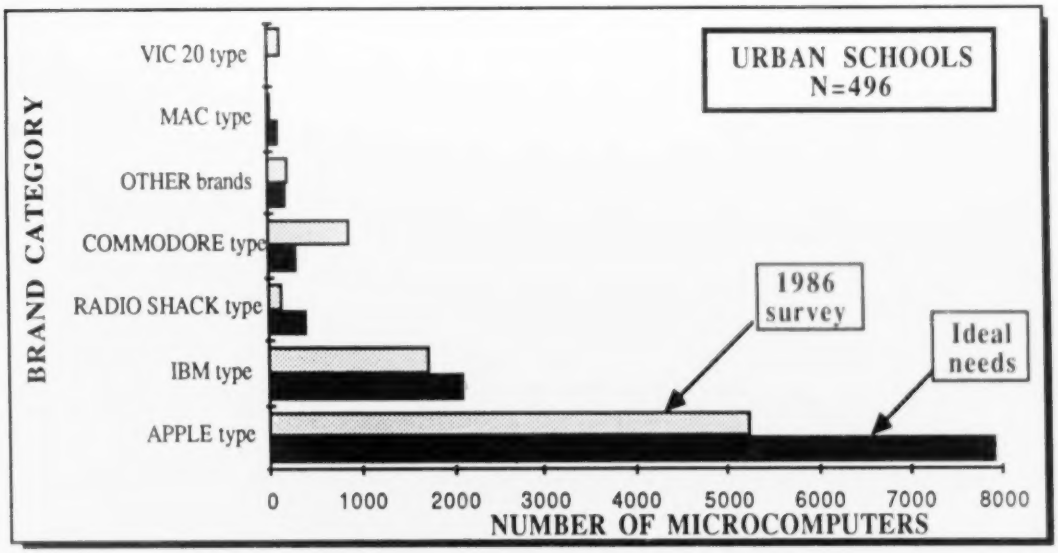
TABLE 92

Ideal Number of Microcomputers Required in
Urban and Rural Schools
(January 1, 1986 Findings Shown in Italics)

BRAND CATEGORY	NUMBER OF MICROCOMPUTERS EDMONTON	CALGARY	URBAN	RURAL
APPLE type	3,385 (79.0%)	4,535 (66.5%)	7,920 (71.2%)	11,151 (80.8%)
APPLE type - 1986	*2,767 (67.9%)*	*2,487 (56.7%)*	*5,245 (62.0%)*	*8,990 (74.4%)*
MAC type	58 (1.4%)	49 (0.7%)	107 (1.0%)	363 (2.6%)
MAC type - 1986	*51 (1.3%)*	*3 (0.1%)*	*54 (0.6%)*	*143 (1.2%)*
COMMODORE type	182 (4.2%)	115 (1.7%)	297 (2.7%)	504 (3.7%)
COMMODORE type - 1986	*503 (12.3%)*	*376 (8.6%)*	*879 (10.4%)*	*1,026 (8.5%)*
VIC 20 type	25 (0.6%)	10 (0.1%)	35 (0.3%)	39 (0.3%)
VIC 20 type - 1986	*117 (2.9%)*	*24 (0.5%)*	*141 (1.7%)*	*118 (1.0%)*
IBM type	592 (13.8%)	1,548 (22.7%)	2,140 (19.3%)	1,582 (11.5%)
IBM type - 1986	*489 (12.0%)*	*1,254 (28.6%)*	*1,743 (20.6%)*	*1,373 (11.4%)*
RADIO SHACK type	0 (0.0%)	410 (6.0%)	410 (3.7%)	65 (0.5%)
RADIO SHACK type - 1986	*54 (1.3%)*	*96 (2.2%)*	*150 (1.8%)*	*160 (1.3%)*
OTHER BRANDS	42 (1.0%)	158 (2.3%)	200 (1.8%)	83 (0.6%)
OTHER BRANDS - 1986	*97 (2.4%)*	*147 (3.4%)*	*244 (2.9%)*	*276 (2.3%)*
TOTAL	**4,284**	**6,825**	**11,109**	**13,787**
TOTAL - 1986	***4,078***	***4,387***	***8,465***	***12,086***

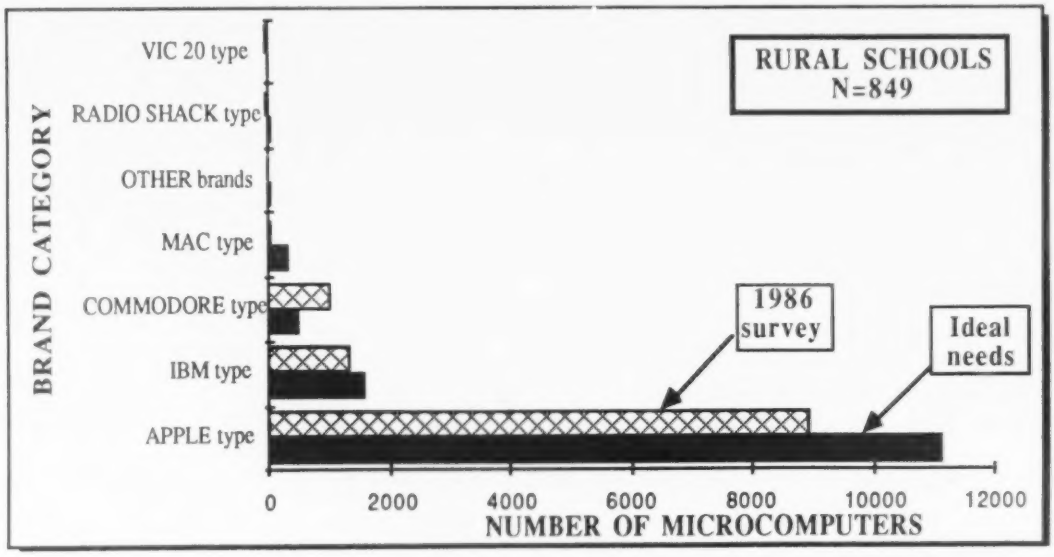
GRAPH 26

Comparison of Actual (January 1, 1986) and Ideal Number of Microcomputers in Urban Schools by Brand Category



GRAPH 27

Comparison of Actual (January 1, 1986) and Ideal Number of Microcomputers in Rural Schools by Brand Category



Of the 496 urban schools that completed survey forms, 491 (99.0%) reported having one or more microcomputers in the school, while five schools (1.0%) had no microcomputers at all. Of the 946 rural schools that completed survey forms, 860 (90.9%) reported having one or more microcomputers in the school. This means that of 193,751 students attending 496 urban schools that participated in this survey, only 837 (0.4%) attended schools that did not have any microcomputers, and of 223,610 students attending 946 urban schools that participated in this survey, 3,163 (1.4%) attended schools that did not have any microcomputers .

E. Location of Microcomputers - Urban and Rural Schools

The next section of the survey sought to determine where microcomputers in urban and rural schools were typically housed. Seven distinct areas of the school were identified and respondents were asked to indicate the number of microcomputers housed in each of the seven areas. An eighth area ("OTHER LOCATION") was added to provide for those cases that did not appear to be included in the other seven areas. While most respondents completed this portion of the survey, in some cases the total number of microcomputers accounted for in this portion of the survey did not agree with the number specified in a previous portion of the survey (in which respondents were asked to indicate the number of microcomputers located in the school by brand category). As a result, there was a difference (1.6%) between the totals reported in these two portions of the survey. The results of this portion of the survey are summarized in Table 93. Graph 28 depicts the number of microcomputers housed in each of the areas on January 1, 1986 together with

the number of urban and rural schools reporting microcomputers in each of the areas.

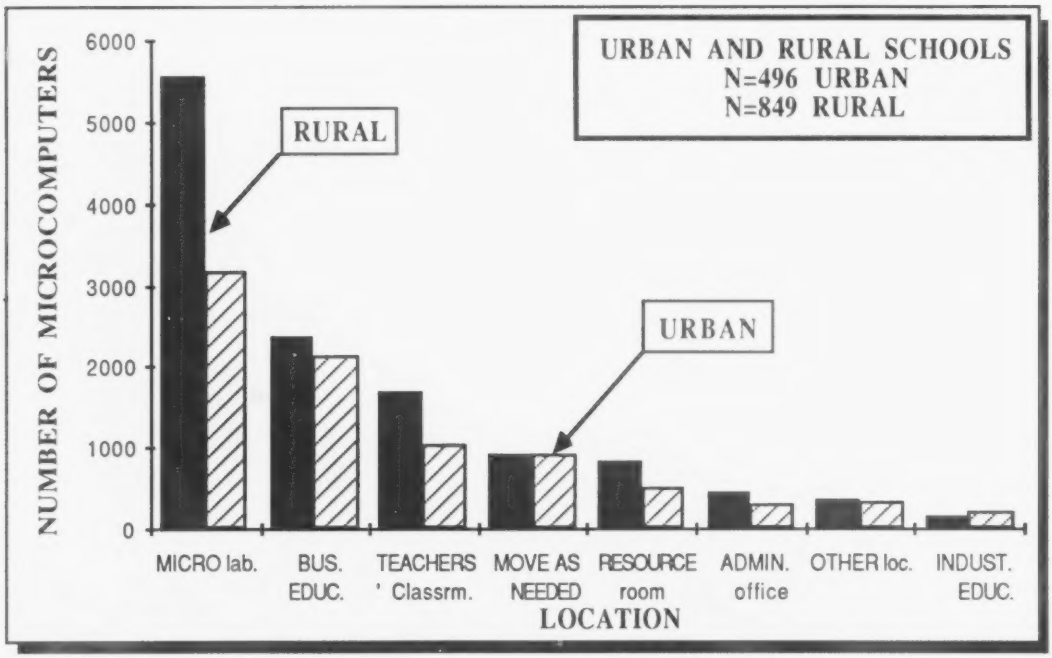
TABLE 93

Location of Microcomputers in Urban and Rural Schools

	NUMBER OF MICROCOMPUTERS			
LOCATION	EDMONTON	CALGARY	URBAN	RURAL
MICRO LAB.	1,688 (41.4%)	1,490 (34.0%)	3,178 (37.5%)	5,591 (46.3%)
RESOURCE ROOM	207 (5.1%)	302 (6.9%)	509 (6.0%)	827 (6.9%)
ADMIN. OFFICE	139 (3.4%)	167 (3.8%)	306 (3.6%)	445 (3.7%)
TEACHERS' CLASSROOM	527 (12.9%)	493 (11.2%)	1,020 (12.1%)	1,682 (13.9%)
MOVE AS NEEDED	337 (8.3%)	590 (13.5%)	927 (11.0%)	909 (7.5%)
INDUSTRIAL EDUC. LAB.	146 (3.6%)	57 (1.3%)	203 (2.4%)	158 (1.3%)
BUSINESS EDUC.	858 (21.0%)	1,260 (28.7%)	2,118 (25.0%)	2,359 (19.5%)
OTHER LOCATION	140 (3.4%)	172 (3.9%)	312 (3.7%)	364 (3.0%)
UNACCOUNTED FOR	36 (0.9%)	-144 (-3.3%)	-108 (-1.3%)	-249 (-2.1%)
TOTAL	**4,078**	**4,387**	**8,465**	**12,086**

GRAPH 28

Location of Microcomputers in Urban and Rural Schools



The largest proportion of microcomputers in both urban schools (37.5%) and rural schools (46.7%) are located in microcomputer laboratories. The second largest proportion of microcomputers in both urban and rural schools is located in the business education area with urban schools allocating a greater proportion of microcomputers (25.0%) to this area than rural schools (19.8%). Most of this difference can be attributed to Calgary, where 28.7% of the provincial installed base of microcomputers was allocated to business education. In Edmonton, the proportion of microcomputers allocated to business education was 19.8% of the provincial installed base which is only slightly higher than the corresponding result for rural schools.

Respondents were also asked to indicate the planned physical location of the additional microcomputers they planned to purchase during the next fiscal year. Table 94 presents the findings of this portion of the survey. Quantities indicated in italics represent the total number of microcomputers available at each physical location on January 1, 1986 and are included for comparison purposes only. These results indicate that a smaller proportion of the new microcomputers which are purchased for urban and rural schools during the current fiscal year are destined to be located in general purpose microcomputer laboratories than is now the case. In urban schools, 32.8% of all microcomputers purchased in the province would be allocated to microcomputer laboratories (down from 37.5% reported on January 1, 1986) while in rural schools, 30.4% of all microcomputers purchased in the province would be allocated to microcomputer laboratories (down from 46.7% reported on January 1, 1986). A larger proportion of the new microcomputers in both urban and rural schools will be located in business education with 37.6% (up from 25.0% reported on January 1, 1986) of all microcomputers purchased in the province allocated to business education laboratories in urban schools and 32.3% (up from 19.8% reported on January 1, 1986) of all microcomputers purchased in the province would be allocated to business education in rural schools .

TABLE 94

Planned Location of Microcomputers in Urban and Rural Schools
(January 1, 1986 Findings Shown in Italics)

LOCATION	NUMBER OF MICROCOMPUTERS EDMONTON	CALGARY	URBAN	RURAL
MICRO LAB.	261 (34.8%)	284 (31.2%)	545 (32.8%)	650 (30.4%)
MICRO LAB.	*1,688 (41.4%)*	*1,490 (34.0%)*	*3,178 (37.5%)*	*5,591 (46.7%)*
RESOURCE ROOM	79 (10.5%)	38 (4.2%)	117 (7.0%)	116 (5.4%)
RESOURCE ROOM	*207 (5.1%)*	*302 (6.9%)*	*509 (6.0%)*	*827 (6.9%)*
ADMIN. OFFICE	22 (2.9%)	37 (4.1%)	59 (3.6%)	95 (4.4%)
ADMIN. OFFICE	*139 (3.4%)*	*167 (3.8%)*	*306 (3.6%)*	*444 (3.7%)*
TEACHERS' CLASSROOMS	57 (7.6%)	109 (12.0%)	166 (10.0%)	284 (13.3%)
TEACHERS' CLASSROOMS	*527 (12.9%)*	*493 (11.2%)*	*1,020 (12.0%)*	*1,682 (14.1%)*
MOVE AS NEEDED	33 (4.4%)	103 (11.3%)	136 (8.2%)	166 (7.8%)
MOVE AS NEEDED	*337 (8.3%)*	*590 (13.4%)*	*927 (11.0%)*	*909 (7.6%)*
INDUSTRIAL EDUC. LAB.	16 (2.1%)	2 (0.2%)	18 (1.1%)	19 (0.9%)
INDUSTRIAL EDUC. LAB.	*146 (3.6%)*	*57 (1.3%)*	*203 (2.4%)*	*158 (1.3%)*
BUSINESS EDUC.	292 (38.9%)	333 (36.5%)	625 (37.6%)	690 (32.3%)
BUSINESS EDUC.	*858 (21.0%)*	*1,260 (28.7%)*	*2,118 (25.0%)*	*2,359 (19.8%)*
OTHER LOCATION	12 (1.6%)	5 (0.5%)	17 (1.0%)	38 (1.8%)
OTHER LOCATION	*140 (3.4%)*	*172 (3.9%)*	*312 (3.7%)*	*364 (3.1%)*
UNACCOUNTED FOR	-22 (-2.9%)	0 (0.0%)	-22 (-1.3%)	78 (3.7%)
UNACCOUNTED FOR	*36 (0.9%)*	*-144 (-3.3%)*	*-108 (-1.3%)*	*-249 (-2.1%)*
TOTAL	**750**	**911**	**1,661**	**2,136**
TOTAL	***4,078***	***4,387***	***8,465***	***12,086***

Respondents were also asked to indicate the ideal numbers of microcomputers in each of the physical locations. The results of these responses are presented in Table 95. Graphs 29 and 30 illustrate the comparison between the actual number of microcomputers reported in urban and rural schools on January 1, 1986 and the ideal number of microcomputers

required in urban and rural schools. These results indicate that, ideally, the largest proportion of microcomputers in urban (40.4%) and rural (50.1%) schools should be located in a general purpose microcomputer laboratory while the second largest proportion (17.1% and 21.0%, respectively) should be located in teachers' classrooms. The results reported for business education are interesting because both urban and rural schools reported that the number of microcomputers in the schools on January 1, 1986 was significantly GREATER than the ideal number required. In the case of urban schools, the number of microcomputers reported in business education on January 1, 1986 was 2,118 (25.0% of the urban installed base) while the ideal number reported was 1,387 (12.5% of the ideal total for the urban schools in the province). This finding was consistent with the results reported in both Edmonton and Calgary schools. In the case of rural schools, the number of microcomputers reported in business education on January 1, 1986 was 2,361 (19.8% of the rural installed base) while the ideal number reported was 1,956 (16.4% of the ideal total for the rural schools in the province). These findings are perhaps even more significant in view of the large numbers of microcomputers that schools are planning to purchase for business education during the current fiscal year. If urban and rural schools purchase additional microcomputers for business education during the current fiscal year as reported in this survey, the actual number of microcomputers in business education in urban schools would increase to 2,743 which is 197.8% above the reported ideal (1,387) while the actual number of microcomputers in business education in rural schools would increase to 3,051 which is 156.0% above the reported ideal (1,950). The results of this portion of the survey are summarized in Table 95. Graphs 29 and 30 depict the number of microcomputers housed in each of the

areas on January 1, 1986 together with the number of urban and rural schools reporting microcomputers in each of the areas.

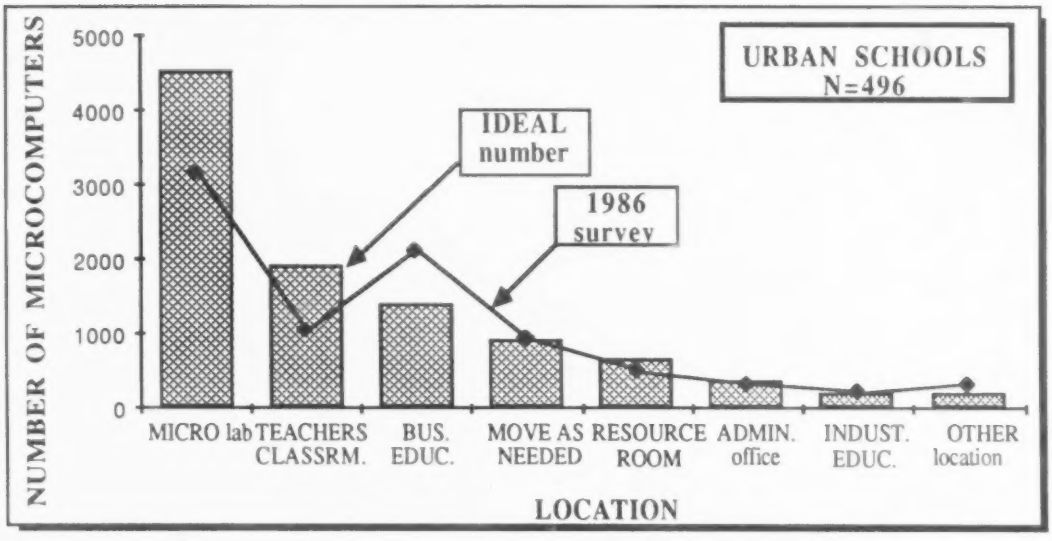
TABLE 95

Ideal Location of Microcomputers in Urban and Rural Schools
(January 1, 1986 Findings Shown in Italics)

LOCATION	NUMBER OF MICROCOMPUTERS EDMONTON	CALGARY	URBAN	RURAL
MICRO LAB.	2,019 (47.1%)	2,471 (36.2%)	4,490 (40.4%)	5,978 (43.4%)
MICRO LAB.	*1,688 (41.4%)*	*1,490 (34.0%)*	*3,178 (37.5%)*	*5,591 (46.7%)*
RESOURCE ROOM	211 (4.9%)	464 (6.8%)	675 (6.1%)	907 (6.6%)
RESOURCE ROOM	*207 (5.1%)*	*302 (6.9%)*	*509 (6.0%)*	*827 (6.9%)*
ADMIN. OFFICE	123 (2.9%)	251 (3.7%)	374 (3.4%)	395 (2.9%)
ADMIN. OFFICE	*139 (3.4%)*	*167 (3.8%)*	*306 (3.6%)*	*444 (3.7%)*
TEACHERS' CLASSROOMS	640 (14.9%)	1,261 (18.5%)	1,901 (17.1%)	2,504 (18.1%)
TEACHERS' CLASSROOMS	*527 (12.9%)*	*493 (11.2%)*	*1,020 (12.0%)*	*1,682 (14.1%)*
MOVE AS NEEDED	176 (4.1%)	725 (10.6%)	901 (8.1%)	761 (5.5%)
MOVE AS NEEDED	*337 (8.3%)*	*590 (13.4%)*	*927 (11.0%)*	*909 (7.6%)*
INDUSTRIAL EDUC. LAB.	131 (3.1%)	71 (1.0%)	202 (1.8%)	174 (1.3%)
INDUSTRIAL EDUC. LAB.	*146 (3.6%)*	*57 (1.3%)*	*203 (2.4%)*	*158 (1.3%)*
BUSINESS EDUC.	458 (10.7%)	929 (13.6%)	1,387 (12.5%)	1,950 (14.1%)
BUSINESS EDUC.	*858 (21.0%)*	*1,260 (28.7%)*	*2,118 (25.0%)*	*2,359 (19.8%)*
OTHER LOCATION	47 (1.1%)	127 (1.9%)	174 (1.6%)	231 (1.7%)
OTHER LOCATION	*140 (3.4%)*	*172 (3.9%)*	*312 (3.7%)*	*364 (3.1%)*
UNACCOUNTED FOR	479 (11.2%)	526 (7.7%)	1,005 (9.0%)	-887 (6.4%)
UNACCOUNTED FOR	*36 (0.9%)*	*-144 (-3.3%)*	*-108 (-1.3%)*	*-249 (-2.1%)*
TOTAL	**4,284**	**6,825**	**11,109**	**13,787**
TOTAL	***4,078***	***4,387***	***8,465***	***12,086***

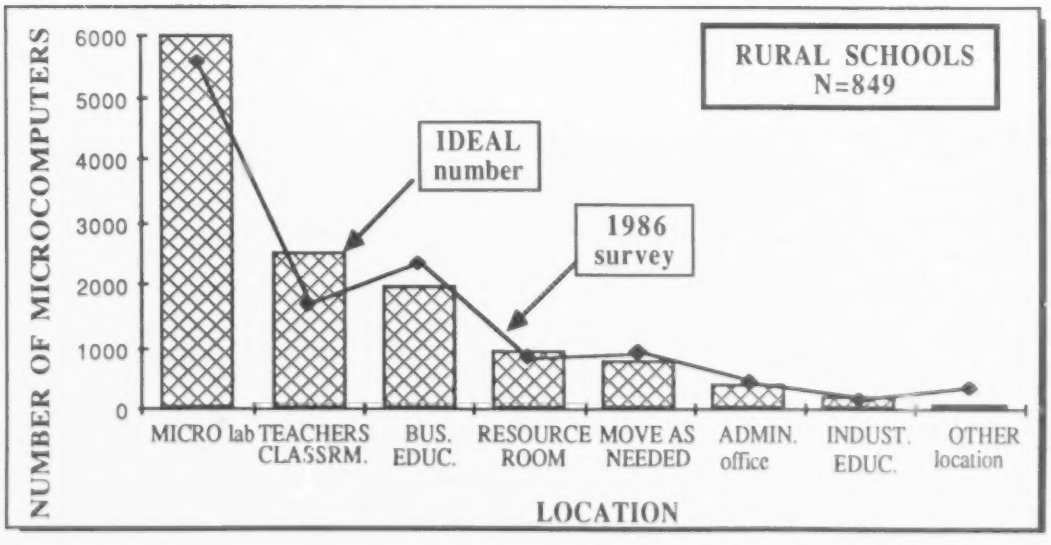
GRAPH 29

Comparison of Actual (January 1, 1986) and Ideal Number of Microcomputers in Urban Schools by Location



GRAPH 30

Comparison of Actual (January 1, 1986) and Ideal Number of Microcomputers in Rural Schools by Location



F. Specially Equipped Microcomputers - Urban and Rural Schools

Respondents were asked to report the number of microcomputers they had in the school which had been specially equipped to generate French characters. A total of 46 of the 580 schools surveyed (7.9%) indicated that they had one or more microcomputers specially equipped to generate French characters. The total number of microcomputers equipped in this manner was 173 (3.6% of the total installed base of microcomputers in urban and rural schools). A total of 36 urban and rural school respondents (6.2%) indicated that they were planning to equip microcomputers to generate French characters during the current fiscal year. The number of microcomputers specially equipped with French characters which would be added in the current fiscal year was reported to be 112 (15.2% of the microcomputers planned for the current fiscal year). Respondents were asked to indicate what they believed to be the ideal number of microcomputers specially equipped with French characters for their school. A total of 123 of the 580 urban and rural schools (21.2%) indicated that, ideally, they should have one or more microcomputers specially equipped to generate French characters and they indicated that, ideally, the total number of microcomputers that should be so equipped was 807 (8.8% of the ideal number of microcomputers reported). The responses to questions involving microcomputers specially equipped to generate French characters are summarized in Table 96.

TABLE 96

Microcomputers Specially Equipped to
Generate French Characters - Urban and Rural Schools

	URBAN		RURAL	
	SCHOOLS	COMPUTERS	SCHOOLS	COMPUTERS
Installed as of January 1, 1986	45 (9.1%)	368 (4.3%)	75 (8.8%)	392 (3.2%)
Number to be added this fiscal year	37 (7.5%)	224 (12.5%)	48 (5.7%)	212 (10.5%)
Total installed at end of this fiscal year	82 (16.5%)	592 (5.8%)	123 (14.5%)	604 (4.3%)
Ideal number	118 (23.8%)	1,324 (11.9%)	171 (20.1%)	1,079 (7.8%)

Respondents were also asked to report the number of microcomputers they had in the school which had been specially equipped for use by physically disadvantaged students. A total of 19 of the 580 schools surveyed (3.3%) indicated that they had one or more microcomputers specially equipped for use by physically disadvantaged students. The total number of microcomputers equipped in this manner was 19 (0.4% of the total installed base of microcomputers in urban and rural schools). A total of five of the 580 urban and rural school respondents (0.9%) indicated that they were planning to equip microcomputers for use by physically disadvantaged students during the current fiscal year. The number of microcomputers specially equipped for use by physically disadvantaged students which would be added in the current fiscal year was reported to be five (0.7% of the microcomputers planned for the current fiscal year). Respondents were asked to indicate what they believed to be the ideal number of microcomputers specially equipped for use by physically disadvantaged students for their school. A total of 107 of the 580 urban and rural schools surveyed (18.4%) indicated that, ideally, they should have one or more microcomputers specially equipped for use by physically disadvantaged students and, ideally, they indicated that the total number of

microcomputers that should be so equipped was 156 (1.7% of the ideal number of microcomputers reported). The responses to questions involving microcomputers specially equipped for use by physically disadvantaged students are summarized in Table 97.

TABLE 97

Microcomputers Specially Equipped for Use by
Physically Disadvantaged Students - Urban and Rural Schools

	URBAN		RURAL	
	SCHOOLS	COMPUTERS	SCHOOLS	COMPUTERS
Installed as of January 1, 1986	17 (1.4%)	20 (0.2%)	28 (3.3%)	33 (0.3%)
Number to be added this fiscal year	4 (0.8%)	5 (0.3%)	5 (0.6%)	5 (0.2%)
Total installed at end of this fiscal year	21 (4.2%)	25 (0.2%)	33 (3.0%)	38 (0.3%)
Ideal number	87 (17.5%)	1,209 (10.9%)	87 (16.1%)	191 (1.4%)

G. Microcomputer Maintenance - Urban and Rural Schools

Respondents were asked to indicate how they were currently handling microcomputer maintenance in their school. A total of 320 of the 496 urban school respondents (64.5%) indicated that maintenance was performed by a maintenance person at central office. Only 191 of the 849 rural school respondents (22.5%) indicated that maintenance was performed by a maintenance person at central office. A relatively large proportion of rural school respondents (34.3%) indicated that maintenance was performed by a commercial shop in another city. It was interesting to note that more than 10% of the respondents in both urban and rural schools indicated that maintenance was either performed by a teacher or by the computer coordinator. A

summary of responses to the question of microcomputer maintenance is presented in Table 98.

TABLE 98

Microcomputer Maintenance - Urban and Rural Schools

	URBAN		RURAL	
	SCHOOLS	PERCENT	SCHOOLS	PERCENT
Teacher	20	4.0	64	7.5
Computer Coordinator	31	6.3	30	3.5
Central Office Maintenance Person	320	64.5	191	22.5
Local Commercial Shop	62	12.5	81	9.5
Commercial Shop in Another City	1	0.2	291	34.3
Other	10	2.0	31	3.7
No Response	52	10.5	161	19.0
TOTAL	**496**	**100.0**	**849**	**100.0**

H. Access to Microcomputers - Urban and Rural Schools

Respondents were asked to indicate the extent to which both students and teachers in their school had access to microcomputers in the school beyond normal class times. The results indicated that in 313 of the 496 urban schools surveyed, (63.1%) and 489 of the 849 rural schools surveyed (57.6%), students had limited access to the microcomputers beyond normal class times, while in 33 urban schools (6.7%) and 51 rural schools (6.0%) students had no access to the microcomputers beyond normal class time. A total of 343 of the 496 urban respondents (69.2%) and 489 of the 849 rural respondents (57.6%) indicated that teachers had easy access to the microcomputers beyond normal

class time. The findings with respect to access to the microcomputers in the school are summarized in Table 99.

TABLE 99

Access to Microcomputers - Urban and Rural Schools

	URBAN		RURAL	
	STUDENTS	TEACHERS	STUDENTS	TEACHERS
Easy access	128 (25.8%)	343 (69.2%)	203 (23.9%)	489 (57.6%)
Limited access	313 (63.1%)	121 (24.4%)	489 (57.6%)	238 (28.0%)
No access	33 (6.7%)	4 (0.8%)	51 (6.0%)	14 (1.7%)
No response	22 (4.4%)	28 (5.6%)	106 (12.5%)	108 (12.7%)
TOTAL	**580**	**580**	**849**	**849**

I. Keyboarding - Urban and Rural Schools

Respondents were asked to indicate what emphasis they are now placing on keyboarding in their school by specifying the proportion of students in the school who are now taking one or more courses in keyboarding. The results indicated that in 234 of the 496 urban schools surveyed (47.2%) and 376 out of 849 rural schools surveyed (44.3%), less than one fifth of the students took a course in keyboarding. In 36 urban schools (7.2%) and 37 rural schools (4.4%), more than four fifths of the students took one or more courses in keyboarding. The findings with respect to the extent to which keyboarding is now being taught are summarized in Table 100.

TABLE 100

Extent to Which Keyboarding Courses
are Presently Being Taught - Urban and Rural Schools

STUDENTS TAKING KEYBOARDING COURSES	URBAN SCHOOLS	RURAL SCHOOLS
less than one fifth	234 (47.2%)	376 (44.3%)
between one fifth and two fifths	117 (23.6%)	188 (22.1%)
between two fifths and three fifths	47 (9.5%)	105 (12.4%)
between three fifths and four fifths	21 (4.2%)	19 (2.2%)
more than four fifths	36 (7.2%)	37 (4.4%)
no response	41 (8.3%)	124 (14.6%)
TOTAL	**496**	**849**

Respondents were also asked to indicate what emphasis they will place on keyboarding in their school during the next year by specifying the proportion of students in the school who will be taking one or more courses in keyboarding at that time. The results indicated that in 145 of the 496 urban schools surveyed (29.2%) and 241 out of 849 rural schools surveyed (28.4%), less than one fifth of the students will be taking a course in keyboarding next year. In 52 urban schools (10.5%) and 47 rural schools (5.5%), more than four fifths of the students will take one or more courses in keyboarding next year. The findings with respect to the extent to which keyboarding will be taught next year are summarized in Table 101.

TABLE 101

Extent to Which Keyboarding Courses
Will Be Taught - Urban and Rural Schools

STUDENTS TAKING KEYBOARDING COURSES	URBAN SCHOOLS	RURAL SCHOOLS
less than one fifth	145 (29.2%)	241 (28.4%)
between one fifth and two fifths	142 (28.6%)	224 (26.4%)
between two fifths and three fifths	69 (13.9%)	147 (17.3%)
between three fifths and four fifths	36 (7.3%)	52 (6.1%)
more than four fifths	52 (10.5%)	47 (5.5%)
no response	52 (10.5%)	138 (16.3%)
TOTAL	**496**	**849**

Respondents were asked to indicate what emphasis they would place on keyboarding in their school in an ideal situation by specifying the proportion of students in the school who should be taking one or more courses in keyboarding. The results indicated that in 191 of the 496 urban schools surveyed (38.5%) and 259 out of 849 rural schools surveyed (30.5%), more than four fifths of the students should take one or more courses in keyboarding. The findings with respect to the extent to which keyboarding should be taught in an ideal situation are summarized in Table 102.

TABLE 102

Extent to Which Keyboarding Courses
Should Ideally Be Taught - Urban and Rural Schools

STUDENTS TAKING KEYBOARDING COURSES	URBAN SCHOOLS	RURAL SCHOOLS
less than one fifth	29 (5.9%)	70 (8.3%)
between one fifth and two fifths	103 (12.7%)	120 (14.1%)
between two fifths and three fifths	82 (16.5%)	154 (18.1%)
between three fifths and four fifths	80 (16.1%)	115 (13.6%)
more than four fifths	191 (38.5%)	259 (30.5%)
no response	51 (10.3%)	131 (15.4%)
TOTAL	**496**	**849**

J. Administrative Uses of Microcomputers - Urban and Rural Schools

A total of 233 of the 496 urban schools surveyed (47.0%) and 346 out of 849 rural schools surveyed (40.8%) reported having one or more microcomputers in the school administration office. In the next portion of the survey, respondents were asked to indicate the kinds of administrative software that was being used in the school. A summary of the results of this portion of the survey is presented in Table 103.

TABLE 103
Use of Microcomputers for Administrative Tasks - Urban and Rural Schools

TYPE OF USE	URBAN SCHOOLS	RURAL SCHOOLS
INTEGRATED SOFTWARE	152 (30.6%)	214 (25.2%)
WORD PROCESSING SOFTWARE	235 (47.4%)	326 (38.4%)
SPREADSHEET SOFTWARE	118 (23.8%)	168 (19.8%)
DATA BASE MANAGEMENT SOFTWARE	125 (25.2%)	165 (19.4%)
COMMUNICATIONS SOFTWARE	78 (15.7%)	33 (3.9%)
SCHOOL SCHEDULING SOFTWARE	32 (6.5%)	41 (4.8%)
GRADE/ATTENDANCE RECORDING	98 (19.8%)	161 (19.0%)
SCHOOL ACCOUNTING	73 (14.7%)	91 (10.7%)
SCHOOL TIMETABLING	29 (5.8%)	45 (5.3%)
SCHOOL BUS SCHEDULING	11 (2.2%)	12 (1.4%)

Respondents were also asked to indicate which administrative software packages they expected to be using next year, and which software packages they "should" be using. Many urban and rural school respondents (28.5%) indicated that they expected to be using word processing software for administrative purposes next year. The greatest proportion of respondents (just over 30%) indicated that they "should" be using grade/attendance recording software and school accounting software. The summary of responses to these questions is presented in Table 104.

TABLE 104

Expected Use of Software for Administrative Tasks Next Year
and Perception of Software That Should Be Used
for Administrative Tasks - Urban and Rural Schools

TYPE OF USE	URBAN SCHOOLS NEXT YEAR	URBAN SCHOOLS IDEAL	RURAL SCHOOLS NEXT YEAR	RURAL SCHOOLS IDEAL
INTEGRATED SOFTWARE	26 (5.2%)	60 (12.1%)	445 (52.4%)	589 (69.4%)
WORD PROCESSING SOFTWARE	52 (10.5%)	69 (13.9%)	630 (74.2%)	805 (94.8%)
SPREADSHEET SOFTWARE	55 (11.1%)	73 (14.7%)	362 (42.6%)	518 (61.0%)
DATA BASE MGT. SOFTWARE	36 (7.3%)	59 (11.9%)	354 (41.7%)	495 (58.3%)
COMMUNICATIONS SOFTWARE	24 (4.8%)	87 (17.5%)	158 (18.6%)	332 (39.1%)
SCHOOL SCHEDULING SOFTWARE	14 (2.8%)	74 (14.9%)	122 (14.4%)	304 (35.8%)
GRADE/ATTENDANCE RECORDING	41 (8.3%)	105 (21.2%)	358 (42.2%)	574 (67.6%)
SCHOOL ACCOUNTING	38 (7.7%)	132 (26.6%)	255 (30.0%)	479 (56.4%)
SCHOOL TIMETABLING	22 (4.4%)	96 (19.4%)	123 (14.5%)	335 (39.5%)
SCHOOL BUS SCHEDULING	6 (1.2%)	26 (5.2%)	34 (4.0%)	97 (11.4%)

K. Microcomputer-Related Training for Teachers - Urban and Rural Schools

The survey included a number of items dealing with teacher training as it relates to the use of microcomputers. First, respondents were asked to estimate the proportion of their staff who had received training in the use of microcomputers in education as a result of various options. The type of training that was made available to most staff was participation in school workshops. The type of training that was made available to least staff was training that was the result of three or more university or college courses. Table 105 shows the various types of training considered and the proportion of responses to each.

TABLE 105

Staff Training in the Use of
Microcomputers - Urban and Rural Schools

	URBAN SCHOOLS			RURAL SCHOOLS		
TYPE OF TRAIN.	MOST teachers trained in	SOME teachers trained in	NO teachers trained in	MOST teachers trained in	SOME teachers trained in	NO teachers trained in
SCHOOL WRKSHPS.	238 (48.0%)	200 (40.3%)	21 (4.2%)	357 (42.0%)	303 (35.7%)	58 (6.8%)
DISTRICT-SPONS. WORKSHOPS	119 (24.0%)	341 (68.8%)	13 (2.6%)	171 (20.1%)	469 (55.2%)	66 (7.8%)
ONE UNIVERSITY OR COLLEGE COURSE	8 (1.6%)	378 (76.2%)	53 (10.7%)	18 (2.1%)	543 (64.0%)	103 (12.1%)
TWO UNIVERSITY OR COLLEGE COURSES	2 (0.4%)	251 (50.6%)	140 (28.2%)	5 (0.6%)	319 (37.6%)	253 (29.8%)
THREE OR MORE UNIV. OR COLLEGE COURSES	2 (0.4%)	130 (26.2%)	234 (47.2%)	1 (0.1%)	164 (19.3%)	383 (45.1%)
OTHER FORMAL TRAIN.	5 (1.0%)	82 (16.5%)	151 (30.4%)	7 (0.8%)	138 (16.3%)	275 (32.4%)
SELF-TAUGHT	33 (6.7%)	360 (72.6%)	25 (5.0%)	125 (14.7%)	524 (61.7%)	36 (4.2%)

Respondents were asked to indicate what additional training their staff needed in the field of microcomputing. The results indicated that the greatest need for additional training was in the use of productivity software and integration of computers into the curriculum.

TABLE 106

Additional Training Needs in the Use of Microcomputers - Urban and Rural Schools

TYPE OF TRAIN.	URBAN SCHOOLS MOST teachers trained in	URBAN SCHOOLS SOME teachers trained in	URBAN SCHOOLS NO teachers trained in	RURAL SCHOOLS MOST teachers trained in	RURAL SCHOOLS SOME teachers trained in	RURAL SCHOOLS NO teachers trained in
INTRODUCTORY COMPUTER LIT.	110 (22.2%)	260 (52.4%)	57 (11.5%)	210 (24.7%)	377 (44.4%)	78 (9.2%)
USING PROD. SOFTWARE	242 (48.8%)	193 (38.9%)	7 (1.4%)	445 (52.4%)	255 (30.0%)	17 (2.0%)
COMPUTER PROG.	96 (19.4%)	210 (42.3%)	93 (18.8%)	151 (17.8%)	323 (38.0%)	157 (18.5%)
INTEG. OF COMP. INTO THE CURRIC.	339 (68.3%)	134 (27.0%)	3 (0.6%)	564 (66.4%)	170 (20.0%)	9 (1.1%)
OTHER	27 (5.4%)	10 (2.0%)	5 (1.0%)	22 (2.6%)	11 (1.3%)	12 (1.4%)

Respondents were asked to indicate an opinion concerning the minimum amount of pre-service training needs of teachers in the field of computing. A total of 183 of the 496 urban school respondents surveyed (36.9%) and 340 out of 849 rural school respondents surveyed (40.0%) indicated that a minimum of one university or college course would be sufficient, while 108 urban school respondents (21.8%) and 28 out of 849 rural school respondents surveyed (3.2%) indicated that a minimum of two university or college courses would be required. Only 31 of the urban school respondents (6.3%) and 77 of the rural school respondents (9.1%) indicated that the minimum requirement was three or more university or college courses. An overwhelming 382 (77.0%) of the urban school respondents and 791 of the 849 (93.2%) of the rural school respondents indicated that they believed that pre-service teachers needed training in the integration of microcomputer uses in the "teaching methods" courses.

L. Buildings and Facilities - Urban and Rural Schools

The final section in the survey asked respondents to rate a series of statements that described potential problem areas related to school facilities for microcomputers. Each statement was rated in terms of three levels of importance; low, medium and high. The problem that was considered to be a high level problem by the greatest proportion of respondents was one that dealt with procuring and maintaining software. Tables 107 and 108 present a summary of the responses to all of the items in this portion of the survey.

TABLE 107

Problems Related to Buildings and Facilities - Urban Schools

PROBLEM AREA	LEVEL OF IMPORTANCE LOW	MEDIUM	HIGH
APPROPRIATE LOCATION FOR MICROCOMPUTERS	218 (44.0%)	134 (27.0%)	119 (24.0%)
ADEQUATE ACCESS TO MICROCOMPUTERS	130 (26.2%)	174 (35.1%)	168 (33.9%)
APPROPRIATE SPATIAL LAYOUT FOR MICROCOMPUTER FACILITY	241 (48.6%)	139 (28.0%)	76 (15.3%)
ADEQUATE ENVIRONMENTAL CONDITIONS FOR MICROS	229 (46.2%)	149 (30.0%)	82 (16.5%)
ADEQUATE PHYSICAL SECURITY FOR MICROS	185 (37.3%)	154 (31.0%)	132 (26.6%)
PROVIDING STORAGE FOR MICRO EQUIPMENT/SUPPLIES	204 (41.1%)	169 (34.1%)	94 (19.0%)
PROCURING ADEQUATELY DESIGNED WORKSTATIONS	156 (31.5%)	184 (37.1%)	125 (25.2%)
PROVIDING TELECOMMUNICATION LINKS	262 (52.8%)	114 (23.0%)	85 (17.1%)
PROVIDING DISPLAY MONITORS FOR CLASSROOM DEMOS	178 (35.9%)	175 (35.3%)	115 (23.2%)
MEETING POWER REQUIREMENTS FOR MICROS	284 (57.3%)	106 (21.4%)	77 (15.5%)
MAINTAINING MICROS	141 (28.4%)	212 (42.7%)	117 (23.6%)
PROCURING AND MAINTAINING SOFTWARE	37 (7.5%)	141 (28.4%)	297 (59.9%)
OTHER	2 (0.4%)	6 (1.2%)	51 (10.3%)

TABLE 108

Problems Related to Buildings and Facilities - Rural Schools

PROBLEM AREA	LEVEL OF IMPORTANCE LOW	MEDIUM	HIGH
APPROPRIATE LOCATION FOR MICROCOMPUTERS	358 (42.2%)	200 (23.6%)	186 (21.9%)
ADEQUATE ACCESS TO MICROCOMPUTERS	256 (30.2%)	249 (29.3%)	242 (28.5%)
APPROPRIATE SPATIAL LAYOUT FOR MICROCOMPUTER FACILITY	355 (41.8%)	221 (26.0%)	164 (19.3%)
ADEQUATE ENVIRONMENTAL CONDITIONS FOR MICROS	283 (33.3%)	276 (32.5%)	181 (21.3%)
ADEQUATE PHYSICAL SECURITY FOR MICROS	335 (39.5%)	219 (25.8%)	190 (22.4%)
PROVIDING STORAGE FOR MICRO EQUIPMENT/SUPPLIES	307 (36.2%)	278 (32.7%)	157 (18.5%)
PROCURING ADEQUATELY DESIGNED WORKSTATIONS	268 (31.6%)	279 (32.9%)	190 (22.4%)
PROVIDING TELECOMMUNICATION LINKS	435 (51.2%)	170 (20.0%)	129 (15.2%)
PROVIDING DISPLAY MONITORS FOR CLASSROOM DEMOS	265 (31.2%)	288 (33.9%)	186 (21.9%)
MEETING POWER REQUIREMENTS FOR MICROS	407 (47.9%)	186 (21.9%)	140 (16.5%)
MAINTAINING MICROS	200 (23.6%)	258 (30.4%)	284 (33.5%)
PROCURING AND MAINTAINING SOFTWARE	83 (9.8%)	209 (24.6%)	454 (53.5%)
OTHER	7 (0.8%)	9 (1.1%)	45 (5.3%)

IX. SUMMARY AND CONCLUSIONS

A total of 1,489 schools were surveyed to determine the installed base of microcomputers in Alberta schools on January 1, 1986. The results, based on 1,345 schools responding, showed that the total number of microcomputers in these Alberta schools was 20,551, up significantly from 13,748 reported one year earlier. Survey results were tabulated by school level and by brand category. The results clearly illustrate the dominance of APPLE type microcomputers at the elementary and junior high school levels. At the senior high school level, APPLE type and IBM type microcomputers are equally represented. This finding has clear implications for the Alberta Education Clearinghouse. It would seem that the Clearinghouse should concentrate its efforts, primarily at the high school level, on software/courseware evaluation of products designed for APPLE and IBM.

Alberta continues to be amongst the leaders in terms of the quantity of microcomputers in the schools. The average ratio in Alberta schools is 20.3 students per microcomputer, (down significantly from 27.8 reported one year earlier) and while this ratio is far lower than most other provinces in Canada, it is still considerably higher than that recommended by the Report of the Minister's Task Force on Computers in Schools. That report suggested that there should be a minimum of one "...learning station for every eight students in a school".

Following is a brief summary of the findings of this study relative to each major section of the 1986 survey.

A. Population

The majority of the schools in Alberta are either elementary schools (ECS to sixth grade) or elementary-junior high schools (ECS to ninth grade). The total number of schools in these two categories was 974 which was 72.4% of the 1,345 schools surveyed. A total of 247,656 students attended these schools, which is 59.3% of the student population covered by this study.

B. Computer Coordinators

A total of 1,039 of the 1,345 schools surveyed (77.2%) have designated a computer coordinator in the school. The school category showing the greatest proportion of computer coordinators was the junior high school category with 88.6% of the schools in this category having a computer coordinator. The school category showing the smallest proportion of computer coordinators was the mixed divisional school category with 71.3% of the schools in this category having a computer coordinator. Within this category, elementary-junior high schools reported that only 67.1% of the schools in this category had a computer coordinator.

C. Teachers Making Extensive Use of Computers for Instruction

A total of 967 of the schools that were included in this survey (71.9%) reported having at least one teacher in the school who was making extensive use of computers for instruction. The senior high school category showed the

highest proportion in this part of the survey, with 90.1% of the schools having at least one teacher who was making extensive use of computers for instruction. The mixed divisional school category showed the lowest proportion in this part of the survey, with 69.1% of the schools having at least one teacher who was making extensive use of computers for instruction. Within this category, elementary-junior high schools were lowest, with only 63.5% of the schools in this category having at least one teacher who was making extensive use of computers for instruction. The results of this portion of the survey would seem to suggest that in a significant number of the schools, the computers may be under-utilized. Since the category that was lowest in this portion of the survey also had the lowest proportion of schools having a computer coordinator, it is possible that one function of the computer coordinator is to assist teachers to make more extensive use of computers in for instruction.

D. Total Number of Teachers Making Extensive Use of Microcomputers

A total of 2,388 of the 24,026 teachers who taught in the schools included in this study (9.9%) were identified as extensive users of computers for instruction. The greatest proportion of teachers who made extensive use of computers for instruction was in the elementary school category, with 11.8% of the teachers identified as extensive users of computers for instruction. The smallest proportion of teachers who made extensive use of computers for instruction was in the senior high school category, with only 4.8% of the teachers identified as extensive users of computers for instruction. These results seem to suggest that integration of computers into the school curriculum

is taking place more effectively at the elementary school level, but the use of computers for instruction is viewed as being a matter for a few "specialists" at the senior high school level.

E. Number of Microcomputers by Brand Category

The estimated total number of microcomputers in Alberta schools on January 1, 1986 projected from the results reported in this study was 22,752 compared to 16,324 estimated on January 1, 1985. Only two brand categories have substantially increased in numbers, APPLE type, and IBM type. APPLE type microcomputers constituted 69.3% of the installed base of computers in schools (down slightly from 72.0% reported in 1985) while IBM type microcomputers constituted 15.2% (up substantially from 6.3% reported in 1985).

The projection of microcomputer purchases for the next fiscal year indicated that the total number of microcomputers that schools were planning to purchase was 4,203 which was approximately half the 8,143 planned in 1985 and well below the 6,428 actually purchased during the year that followed. Respondents indicated that 54.9% of the projected purchases made during the current fiscal year would be APPLE type (down from 69.1% in 1985) while 37.4% would be IBM type (up from 21.4% in 1985). If the projection for the current fiscal year is realized, then the estimated total number of microcomputers in Alberta schools by January 1, 1987 could reach 26,955. There seems to be a clear indication that the rate at which schools are buying additional microcomputers is starting to decline.

The results of this survey indicated that, ideally, respondents felt that the number of microcomputers needed for Alberta schools was 36,783, with 76.4% of these being APPLE type and 15.1% being IBM type. These results are somewhat surprising since they represent a trend which seems to be opposite to planned purchases. It would appear that the equipment that schools are actually buying and equipment that they are planning to buy is NOT what they consider to be ideal. Perhaps this is an indication that purchasing decisions with respect to the kind of microcomputers that schools buy are heavily influenced by other factors such as government funding policies.

F. Location of Microcomputers in Schools

The results of this study indicated that 41.9% of the microcomputers in Alberta schools are located in microcomputer laboratories with nearly half the schools having at least one such laboratory. Other areas in the schools in which significant proportions of microcomputers are located are business education laboratories (21.5%) and teachers' classrooms (12.9%).

Projections with respect to purchases of microcomputers made during the current fiscal year indicated that 34.6% of the new microcomputers purchased would be allocated to business education laboratories while 31.5% would be allocated to microcomputer laboratories and 11.8% would be allocated to teachers' classrooms. Respondents' opinions with respect to the ideal locations for microcomputers in schools indicated that, ideally, 45.7% of the microcomputers should be located in microcomputer laboratories, 19.2% should be located in teachers' classrooms and only 14.6% should be located in business education laboratories. Once again, these findings seem to suggest

that the purchases that schools are making and are planning to make are inconsistent with what they believe is ideal. These findings are further supported by data that indicates that while the total number of microcomputers located in business education laboratories on January 1, 1986 was 4,479, and that while schools were planning to add 1,315 more microcomputers to business education laboratories during the current fiscal year (to bring the total to 5,794), respondents felt that the ideal number of microcomputers needed for business education laboratories was only 3,343! Perhaps these findings suggest that more effort should be made to eliminate the discrepancy between the computer equipment schools think they need and what is actually being purchased; otherwise, there is a prospect that schools will have spent a great deal of money purchasing equipment which in their opinion is less than ideal.

G. Specially Equipped Microcomputers

Less than 5% of the installed base of microcomputers in Alberta are specially equipped to allow them to be used for French instruction and less than 1% are specially equipped so that they could be used by physically disadvantaged students. In both cases, respondents reported that, ideally, 9.7% of the installed base of microcomputers should be specially equipped for these purposes.

H. Maintenance of Microcomputers

Central office maintenance staff provide maintenance required for microcomputers in 38.0% of the schools. An additional 10.6% of the schools obtain necessary maintenance services from local commercial shops, while 21.7% use commercial shops located in another city or town. A surprising

finding was that 10.7% of the schools reported that maintenance was performed either by a teacher or by the microcomputer coordinator.

I. Access to Microcomputers Outside of Normal School Time

A total of 24.6% of the schools reported that students have easy access to microcomputers outside of normal school time, while only 6.2% reported that students have no access to microcomputers outside of normal school time. A total of 61.9% of the schools reported that teachers have easy access to microcomputers outside of normal school time.

J. Keyboarding

In 45.4% of the schools surveyed, less than one fifth of the students in the school had received instruction in keyboarding, while in only 8.4% of the schools surveyed, between one fifth and two fifths of the students received instruction in keyboarding. Schools indicated that during the current year, the proportion of schools in which less than one fifth of the students received instruction in keyboarding would drop to 28.7% while the proportion of schools in which between one fifth and two fifths of the students received instruction in keyboarding would grow to 43.3%. Only 7.4% of the respondents felt that less than one fifth of the students should ideally be given instruction in keyboarding while 48.0% of the respondents felt that more than four fifths of the students should ideally be given instruction in keyboarding.

K. Administrative Use of Microcomputers

Only 43.1% of the schools surveyed reported that they had at least one microcomputer in the school administrative office. Only 3.6% of the installed base of microcomputers in Alberta has been allocated to school administrative office use.

The two most popular types of software products that are used in the school administrative office are integrated software and word processing software. Ideally, respondents felt that they should be using administrative software packages for recording grades and for performing school accounting tasks.

L. Staff Training Needs

The most frequently used method of providing teachers with training in the use of microcomputers is the school workshop, with 44.2% of the respondents reporting that most of their staff had participated in such workshops. Only 1.9% of the respondents reported that most of their staff had completed a university course in the use of microcomputers. A total of 11.7% of the respondents indicated that most of their staff were "self-taught" with respect to the use of microcomputers.

The greatest proportion (67.1%) of the respondents reported that they felt that teachers should receive training in methods of integrating computers into the curriculum while 51.1% felt that teachers should receive training in the use of productivity software. Only 23.8% of the respondents felt that teachers

should receive training in computer literacy and only 18.4% felt that teachers should receive training in computer programming.

M. Problems Related to Buildings and Facilities

The greatest proportion of respondents (55.8%) reported that "procuring and maintaining software" was a "high level" problem in their schools, while 30.5% of the respondents reported that "providing adequate access to microcomputers" was a "high level" problem.

Table 109 presents a summary of some of the key findings reported elsewhere in this study.

TABLE 109

Microcomputers in Alberta Schools
Summary - January 1986

	SCHOOL LEVEL				
BRAND CATEGORY	ELEM.	JR. HIGH	SR. HIGH	MIXED DIVIS.	TOTAL
APPLE type	**4,226**	**1,547**	**1,902**	**6,569**	**14,244**
	(87.9%)	(82.2%)	(39.3%)	(72.8%)	(69.3%)
APPLE type - 1985	*2,860*	*677*	*1,573*	*4,779*	*9,889*
MAC type	**11**	**9**	**61**	**116**	**197**
	(0.2%)	(0.5%)	(1.2%)	(1.3%)	(1.0%)
MAC type - 1985	*13*	*1*	*17*	*16*	*47*
COMMODORE type	**163**	**151**	**833**	**758**	**1,905**
	(3.4%)	(8.0%)	(17.2%)	(8.4%)	(9.3%)
COMMOD. type - 1985	*135*	*107*	*1,041*	*696*	*1,979*
VIC 20 type	**76**	**26**	**3**	**154**	**259**
	(1.6%)	(1.4%)	(0.1%)	(1.7%)	(1.2%)
VIC 20 type - 1985	*71*	*33*	*1*	*187*	*292*
IBM type	**94**	**69**	**1,918**	**1,035**	**3,116**
	(2.0%)	(3.7%)	(39.6%)	(11.5%)	(15.2%)
IBM type - 1985	*38*	*15*	*507*	*309*	*869*
RADIO SHACK type	**88**	**27**	**53**	**142**	**310**
	(1.8%)	(1.4%)	(1.1%)	(1.6%)	(1.5%)
RADIO SH. type - 1985	*35*	*18*	*27*	*90*	*170*
OTHER types	**149**	**53**	**72**	**246**	**520**
	(3.1%)	(2.8%)	(1.5%)	(2.7%)	(2.5%)
OTHER types - 1985	*154*	*69*	*51*	*228*	*502*
TOTAL	**4,807**	**1,882**	**4,842**	**9,020**	**20,551**
	(23.4%)	(9.2%)	(23.6%)	(43.7%)	(100%)
TOTAL - 1985	*3,306*	*920*	*3,217*	*6,305*	*13,748*
SCHOOLS SURVEYED	580	105	71	589	1,345
	(43.1%)	(7.8%)	(5.3%)	(43.8%)	(100%)
NUMBER OF STUDENTS	159,723	43,006	63,149	151,483	417,361
	(38.3%)	(10.3%)	(15.1%)	(36.3%)	(100%)
STUDENTS/COMPUTER	33.2	22.9	13.0	16.9	20.3
NUMBER OF TEACHERS	8,743	2,531	3,412	9,340	24,026
	(36.4%)	(10.5%)	(14.2%)	(38.9%)	(100%)
COMPUTERS/SCHOOL	8.3	17.9	44.7	15.2	15.3

As we began this decade, our major concern relative to instructional computing involved the acquisition of a sufficient number of microcomputers to enable students to gain a worthwhile experience. The results of this study seem to suggest that we have probably overcome that concern now. However, it would seem that as we move into the last half of this decade, we will be facing two new concerns; the development of excellent instructional software and the development of courses and programs for the adequate preparation of teachers. Clearly, the initiatives that the provincial government has taken in assisting schools to establish a thrust in instructional computing has had a positive result. But further initiatives are needed in the last half of this decade to insure that schools realize full benefits from the investment they have made.

References

Petruk, M. W. Microcomputers in Alberta Schools - 1985, Alberta Education, Edmonton, 1985.

Romaniuk, E. W. Computers in Schools, The Report of the Minister's Task Force on Computers in Schools, Alberta Education, 1983.

APPENDIX A

Alberta
EDUCATION

Devonian Building, West Tower, 11160 Jasper Avenue, Edmonton, Alberta, Canada T5K 0L2

March 3, 1986

Dear Principal:

First let me express my sincere appreciation for your participation in previous surveys concerning microcomputers in Alberta schools. I can assure you that your input has been put to good use.

Again this year the Department has commissioned a study to determine the current and planned use of microcomputers in Alberta schools. This year's study will update our current information and provide direction for future planning.

Dr. M. W. Petruk of the University of Alberta is again conducting the study for us. Would you please complete the enclosed forms and return them to him as soon as possible.

Again, thank you for your cooperation.

Sincerely,

Mel Fenske

Dr. M. R. Fenske
Assistant Deputy Minister
Program Development Division

NOTE: Please use the enclosed envelope and send to Dr. M. W. Petruk as soon as possible. The address is:

Room 642, Education South
Department of Industrial and Vocational Education
University of Alberta
Edmonton, Alberta
T6G 2G5
Telephone - 432-5363

FACULTY OF EDUCATION
DEPARTMENT OF INDUSTRIAL AND VOCATIONAL EDUCATION
TELEPHONE (403) 432-3678

February 28, 1986

THE UNIVERSITY OF ALBERTA
EDMONTON, ALBERTA, CANADA
T6G 0Y1

Dear Principal:

RE: Microcomputers in Alberta Schools

For the past several years, I have conducted periodic surveys of Alberta schools to determine the extent to which microcomputers were being used in the schools. This information has been very valuable to many groups, including Alberta Education, on whose behalf the surveys were conducted.

While the number of microcomputers in Alberta schools has been growing rapidly in the past, we are most anxious to update our data. We are therefore enclosing a survey form concerning the number and type of microcomputers you have in your school. You will notice that on the survey form, we have included the information about your school which was gathered the last time we conducted the survey. We hope that including this information will make it easier for you to complete the survey form.

Please note that we would like you to respond to questions concerning the **number of microcomputers you have effective January 1, 1986.** However, information concerning **student enrolments should be answered effective September 30, 1985.** I would also draw your attention to the fact that this year's survey will be conducted in **two parts**. The **first part** is the one that is enclosed with this letter. In it you are asked the name of the "computer coordinator" in your school (if you have one) and the names of teachers in your school who are making extensive use of microcomputers. Approximately two weeks after this information is received, I will send you the **second part** of the survey which the people who you have identified will be asked to complete. The questions in the second part of the survey will deal with matters related to curriculum and software.

When you have completed the survey, please place it in the enclosed, self-addressed envelope and mail it to me. Should you have any questions or concerns about any part of this survey, please do not hesitate to call **Dr. Milt Petruk** at **432-5363**.

Thank you for your time and cooperation in completing this survey. I am confident that the information provided by the survey will be most valuable in helping us plan programs which will assist you in meeting the challenge of instructional computing in your school.

Sincerely,

Dr. Milton W. Petruk,
Professor

INSTRUCTIONS

1. THE INFORMATION CONTAINED IN THIS SURVEY IS BASED ON THE LAST SURVEY THAT WAS COMPLETED FOR YOUR SCHOOL.

2. READ EACH ITEM CAREFULLY. FILL IN THE INFORMATION BOXES PROVIDED. BE SURE THAT ALL OF THE INFORMATION PRINTED ON THE FORM IS CORRECT OR HAS BEEN CORRECTED.

3. IF YOU HAVE ANY DIFFICULTY RESPONDING TO ANY OF THE ITEMS IN THE SURVEY, PLEASE CALL :

   DR. M. W. PETRUK AT

   432-5363

4. THE INFORMATION WHICH WILL RESULT FROM THIS SURVEY WILL BE OF GREAT VALUE IN FORMULATING FUTURE PLANS RELATIVE TO INSTRUCTIONAL COMPUTING. YOUR ASSISTANCE IS GREATLY APPRECIATED.

ELEMENTARY SCHOOL SURVEY

MICROCOMPUTERS IN ALBERTA SCHOOLS - 1986 SURVEY

School name: School code:

Location: Jurisdiction code:

COMPUTER COORDINATOR
If you have formally or informally identified an individual in your school as the "computer coordinator", please enter his or her name and school telephone number:
Name:_____
Phone:_____

TEACHERS USING MICROCOMPUTERS
Please list the names and areas of specialization of up to three teachers on your staff who in your opinion are making extensive use of computers in their classes:
Name:_____ **Area:**_____ **Grade:**____
Name:_____ **Area:**_____ **Grade:**____
Name: **Area:** **Grade:**

School population and grades taught:

	Sept 1 1985	Sept 1 1986		Sept 1 1985	Sept 1 1986
Approx. No. of certificated staff(excluding ECS):			Approx. No. of ECS staff:		
Approx. No. of students(excluding ECS):			Approx. No. of ECS students:		
Lowest grade taught:			Highest grade taught:		

Microcomputer inventory (effective January 1, 1986):

	TOTAL reported on Jan. 1/85	TOTAL Number on Jan. 1/86	NEW ONES to be added in 1986	IDEAL Number
1. **APPLE II type** incl. Franklin, Circle, or other compatible				
2. **APPLE Macintosh type** incl Lisa				
3. **COMMODORE type** incl. 2001, 8032 and Superpet series but not IBM compatibles				
4. **COMMODORE VIC 20**				
5. **IBM TYPE** incl. PC, XT, AT, Sperry, Olivetti, or other IBM compatibles				
6. **RADIO SHACK TYPE** incl. model 1, 3, 4 and 100 but not IBM compatibles				
7. **OTHERS** Texas Inst. Acorn, Icon, etc.				
TOTAL				

Location of microcomputers in the school:

	TOTAL reported on Jan. 1/85	TOTAL Number on Jan. 1/86	NEW ONES to be added in 1986	IDEAL Number
1. General purpose microcomputer lab				
2. Resource room/library				
3. Teacher's classroom				
4. School Administration Office				
5. Transported from room to room				
6. Other areas in the school				
TOTAL				

Specially equipped microcomputers: How many of the microcomputers listed above are or will be specially equipped as follows:

	No. reported Jan. 1/85	No. on Jan 1/86	No. new ones in 86	Ideal number
1. Microcomputers equipped with a special "chip" to generate French characters →				
2. Microcomputers equipped with a special attachment to permit use by physically disadvantaged students →				

MICROCOMPUTER EQUIPMENT MAINTENANCE

How have you arranged to take care of maintenance and repair of microcomputer equipment located in your school? Please check only the ONE item which BEST describes your situation.

_____ 1. PERFORMED BY A TEACHER IN THE SCHOOL
_____ 2. PERFORMED BY THE COMPUTER COORDINATOR IN THE SCHOOL
_____ 3. PERFORMED BY A MAINTENANCE PERSON AT CENTRAL OFFICE
_____ 4. PERFORMED BY A LOCAL COMMERCIAL SHOP
_____ 5. PERFORMED BY A COMMERCIAL SHOP IN ANOTHER CITY OR TOWN
_____ 6. OTHER (specify)_____

ACCESS TO MICROCOMPUTERS

To what extent do students and teachers have access to microcomputers beyond normal class times?

	ACCESS BY STUDENTS	ACCESS BY TEACHERS
1. EASY ACCESS. They can get to use a microcomputer any time during the school day. →		
2. LIMITED ACCESS. They can use a microcomputer only on specified days and/or during specified hours of the day. →		
3. NO ACCESS. They can only use a microcomputer during class time in conjunction with certain specific classes →		

Keyboarding

Estimate the percentage of students in your school who are or will be taking one or more courses in keyboarding during the current school year. Then estimate the percentage of students who will be taking keyboarding courses next year. Finally, indicate what percentage of the students in your school you believe **SHOULD** be taking keyboarding courses in an ideal situation. Indicate your choice by placing checkmarks in the appropriate boxes.

	<20%	21 - 40%	41 - 60%	61 - 80%	>81%
1. Percentage NOW taking a course in keyboarding →					
2. Percentage that WILL take keyboarding next year →					
3. Percentage you believe SHOULD take keyboarding →					

ADMINISTRATIVE USE OF PRODUCTIVITY SOFTWARE

Which of the following types of productivity software software are used by the Principal and his/her staff for school administrative purposes in your school?

	using this year	will use next year	should be used
1. INTEGRATED SOFTWARE PACKAGE	☐	☐	☐
2. WORD PROCESSING PACKAGE	☐	☐	☐
3. SPREADSHEET PACKAGE	☐	☐	☐
4. DATA BASE MANAGEMENT PACKAGE	☐	☐	☐
5. COMMUNICATIONS PACKAGE including electronic mail and/or data transfer	☐	☐	☐
6. SCHOOL SCHEDULING PACKAGE	☐	☐	☐
7. GRADE/ATTENDANCE RECORDING	☐	☐	☐
8. SCHOOL ACCOUNTING	☐	☐	☐
9. SCHOOL TIMETABLING	☐	☐	☐
10. SCHOOL BUS SCHEDULING	☐	☐	☐

STAFF TRAINING IN THE USE OF MICROCOMPUTERS

Estimate what proportion of your staff have had training in the uses of microcomputers in education as the result of each of the following. CHECK OFF AS MANY AS IS APPROPRIATE.

	PROPORTION OF STAFF MOST	SOME	NONE
1. BY PARTICIPATING IN SCHOOL WORKSHOPS	☐	☐	☐
2. BY PARTICIPATING IN DISTRICT SPONSORED WORKSHOPS	☐	☐	☐
3. AS THE RESULT OF ONE UNIVERSITY OR COLLEGE COURSE	☐	☐	☐
4. AS THE RESULT OF TWO UNIVERSITY OR COLLEGE COURSES	☐	☐	☐
5. AS THE RESULT OF THREE OR MORE UNIVERSITY OR COLLEGE COURSES	☐	☐	☐
6. AS THE RESULT OF OTHER FORMAL TRAINING specify:_____	☐	☐	☐
7. SELF-TAUGHT	☐	☐	☐

ADDITIONAL TRAINING NEEDS

What additional training in the use of microcomputers in education do you believe that your staff needs? **Check as many items as necessary.**

	PROPORTION OF STAFF MOST	SOME	NONE
1. INTRODUCTORY COMPUTER LITERACY →			
2. HOW TO USE PRODUCTIVITY SOFTWARE →			
3. COMPUTER PROGRAMMING →			
4. INTEGRATION OF COMPUTERS INTO THE CURRICULUM →			
5. OTHER (Specify_____) →			

PRE-SERVICE TRAINING

In your opinion, what is the minimum amount of pre-service training in instructional uses of microcomputers do prospective teachers need?

	check
1. ONE UNIVERSITY/COLLEGE COURSE →	
2. TWO UNIVERSITY/COLLEGE COURSES →	
3. THREE OR MORE UNIVERSITY/COLLEGE COURSES →	
4. INTEGRATION OF MICROCOMPUTER USES IN "TEACHING METHODS" COURSES →	

BUILDINGS AND FACILITIES

Please indicate, by placing checkmarks in the appropriate areas, which of the following items related to school facilities for microcomputers you feel are problems or items of concern in your school.

	LEVEL OF IMPORTANCE low	medium	high
1. Determining an appropriate location for microcomputers →			
2. Providing adequate access to microcomputers →			
3. Determining an appropriate spatial layout for the microcomputer facility →			
4. Providing adequate environmental conditions for the microcomputers →			
5. Providing adequate physical security for the microcomputers →			
6. Providing storage for microcomputer related equipment and supplies →			
7. Procuring adequately designed workstations →			
8. Providing telecommunication links →			
9. Providing display monitors and screens for classroom demonstration →			
10. Meeting power requirements for the microcomputers →			
11. Maintaining the microcomputers →			
12. Procuring and maintaining software →			
13. Other (specify)_____ →			

JUNIOR HIGH SCHOOL SURVEY

School name: School code:

Location: Jurisdiction code:

COMPUTER COORDINATOR
If you have formally or informally identified an individual in your school as the "computer coordinator", please enter his or her name and school telephone number:
Name:_____
Phone:

TEACHERS USING MICROCOMPUTERS
Please list the names and areas of specialization of up to three teachers on your staff who in your opinion are making extensive use of computers in their classes:
Name:_____ **Area:**_____ **Grade:**____
Name:_____ **Area:**_____ **Grade:**____
Name: **Area:** **Grade:**

School population and grades taught:

	Sept 1 1985	Sept 1 1986		Sept 1 1985	Sept 1 1986
Approx. No. of certificated staff:					
Approx. No. of students:					
Lowest grade taught:			Highest grade taught:		

Microcomputer inventory (effective January 1, 1986):

	TOTAL reported on Jan. 1/85	TOTAL Number on Jan. 1/86	NEW ONES to be added in 1986	IDEAL Number
1. **APPLE II type** incl. Franklin, Circle, or other compatible				
2. **APPLE Macintosh type** incl Lisa				
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4. **COMMODORE VIC 20**				
5. **IBM TYPE** incl. PC, XT, AT, Sperry, Olivetti, or other IBM compatibles				
6. **RADIO SHACK TYPE** incl. model 1, 3, 4 and 100 but not IBM compatibles				
7. **OTHERS** Texas Inst. Acorn, Icon, etc.				
TOTAL				

Location of microcomputers in the school:

	TOTAL reported on Jan. 1/85	TOTAL Number on Jan. 1/86	NEW ONES to be added in 1986	IDEAL Number
1. General purpose microcomputer lab				
2. Resource room/library				
3. Teacher's classroom				
4. Industrial Arts				
5. School Administration Office				
6. Transported from room to room				
7. Other areas in the school				
TOTAL				

Specially equipped microcomputers: How many of the microcomputers listed above are or will be specially equipped as follows:

	No. reported Jan. 1/85	No. on Jan 1/86	No. new ones in 86	Ideal number
1. Microcomputers equipped with a special "chip" to generate French characters →				
2. Microcomputers equipped with a special attachment to permit use by physically disadvantaged students →				

MICROCOMPUTER EQUIPMENT MAINTENANCE

How have you arranged to take care of maintenance and repair of microcomputer equipment located in your school? Please check only the ONE item which BEST describes your situation.

_____ 1. PERFORMED BY A TEACHER IN THE SCHOOL
_____ 2. PERFORMED BY THE COMPUTER COORDINATOR IN THE SCHOOL
_____ 3. PERFORMED BY A MAINTENANCE PERSON AT CENTRAL OFFICE
_____ 4. PERFORMED BY A LOCAL COMMERCIAL SHOP
_____ 5. PERFORMED BY A COMMERCIAL SHOP IN ANOTHER CITY OR TOWN
_____ 6. OTHER (specify)_____

ACCESS TO MICROCOMPUTERS

To what extent do students and teachers have access to microcomputers beyond normal class times?

	ACCESS BY STUDENTS	ACCESS BY TEACHERS
1. EASY ACCESS. They can get to use a microcomputer any time during the school day. →		
2. LIMITED ACCESS. They can use a microcomputer only on specified days and/or during specified hours of the day. →		
3. NO ACCESS. They can only use a microcomputer during class time in conjunction with certain specific classes →		

Keyboarding

Estimate the percentage of students in your school who are or will be taking one or more courses in keyboarding during the current school year. Then estimate the percentage of students who will be taking keyboarding courses next year. Finally, indicate what percentage of the students in your school you believe **SHOULD** be taking keyboarding courses in an ideal situation. Indicate your choice by placing checkmarks in the appropriate boxes.

	<20%	21 - 40%	41 - 60%	61 - 80%	>81%
1. Percentage NOW taking a course in keyboarding →					
2. Percentage that WILL take keyboarding next year →					
3. Percentage you believe SHOULD take keyboarding →					

ADMINISTRATIVE USE OF PRODUCTIVITY SOFTWARE

Which of the following types of productivity software software are used by the Principal and his/her staff for school administrative purposes in your school?

	using this year	will use next year	should be used
1. INTEGRATED SOFTWARE PACKAGE	☐	☐	☐
2. WORD PROCESSING PACKAGE	☐	☐	☐
3. SPREADSHEET PACKAGE	☐	☐	☐
4. DATA BASE MANAGEMENT PACKAGE	☐	☐	☐
5. COMMUNICATIONS PACKAGE including electronic mail and/or data transfer	☐	☐	☐
6. SCHOOL SCHEDULING PACKAGE	☐	☐	☐
7. GRADE/ATTENDANCE RECORDING	☐	☐	☐
8. SCHOOL ACCOUNTING	☐	☐	☐
9. SCHOOL TIMETABLING	☐	☐	☐
10. SCHOOL BUS SCHEDULING	☐	☐	☐

STAFF TRAINING IN THE USE OF MICROCOMPUTERS

Estimate what proportion of your staff have had training in the uses of microcomputers in education as the result of each of the following. CHECK OFF AS MANY AS IS APPROPRIATE.

	PROPORTION OF STAFF MOST	SOME	NONE
1. BY PARTICIPATING IN SCHOOL WORKSHOPS	☐	☐	☐
2. BY PARTICIPATING IN DISTRICT SPONSORED WORKSHOPS	☐	☐	☐
3. AS THE RESULT OF ONE UNIVERSITY OR COLLEGE COURSE	☐	☐	☐
4. AS THE RESULT OF TWO UNIVERSITY OR COLLEGE COURSES	☐	☐	☐
5. AS THE RESULT OF THREE OR MORE UNIVERSITY OR COLLEGE COURSES	☐	☐	☐
6. AS THE RESULT OF OTHER FORMAL TRAINING specify:_____	☐	☐	☐
7. SELF-TAUGHT	☐	☐	☐

ADDITIONAL TRAINING NEEDS

What additional training in the use of microcomputers in education do you believe that your staff needs? **Check as many items as necessary.**

	PROPORTION OF STAFF MOST	SOME	NONE
1. INTRODUCTORY COMPUTER LITERACY →			
2. HOW TO USE PRODUCTIVITY SOFTWARE →			
3. COMPUTER PROGRAMMING →			
4. INTEGRATION OF COMPUTERS INTO THE CURRICULUM →			
5. OTHER (Specify_____) →			

PRE-SERVICE TRAINING

In your opinion, what is the minimum amount of pre-service training in instructional uses of microcomputers do prospective teachers need?

	check
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2. TWO UNIVERSITY/COLLEGE COURSES →	
3. THREE OR MORE UNIVERSITY/COLLEGE COURSES →	
4. INTEGRATION OF MICROCOMPUTER USES IN "TEACHING METHODS" COURSES →	

BUILDINGS AND FACILITIES

Please indicate, by placing checkmarks in the appropriate areas, which of the following items related to school facilities for microcomputers you feel are problems or items of concern in your school.

	LEVEL OF IMPORTANCE low	medium	high
1. Determining an appropriate location for microcomputers →			
2. Providing adequate access to microcomputers →			
3. Determining an appropriate spatial layout for the microcomputer facility →			
4. Providing adequate environmental conditions for the microcomputers →			
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6. Providing storage for microcomputer related equipment and supplies →			
7. Procuring adequately designed workstations →			
8. Providing telecommunication links →			
9. Providing display monitors and screens for classroom demonstration →			
10. Meeting power requirements for the microcomputers →			
11. Maintaining the microcomputers →			
12. Procuring and maintaining software →			
13. Other (specify)_____ →			

SENIOR HIGH SCHOOL SURVEY
AND
JUNIOR-SENIOR HIGH SCHOOL SURVEY

School name: School code:

Location: Jurisdiction code:

COMPUTER COORDINATOR
If you have formally or informally identified an individual in your school as the "computer coordinator", please enter his or her name and school telephone number:

Name:_____
Phone:

TEACHERS USING MICROCOMPUTERS
Please list the names and areas of specialization of up to three teachers on your staff who in your opinion are making extensive use of computers in their classes:

Name:_____ **Area:**_____ **Grade:**____
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Name: **Area:** **Grade:**

School population and grades taught:

	Sept 1 1985	Sept 1 1986		Sept 1 1985	Sept 1 1986
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7. **OTHERS** Texas Inst. Acorn, Icon, etc.				
TOTAL				

Location of microcomputers in the school:

	TOTAL reported on Jan. 1/85	TOTAL Number on Jan. 1/86	NEW ONES to be added in 1986	IDEAL Number
1. **Business Educ. classroom/lab.**				
2. **General purpose microcomputer lab**				
3. **Resource room/library**				
4. **Teacher's classroom**				
5. **Industrial Arts**				
6. **School Administration Office**				
7. **Transported from room to room**				
8. **Other areas in the school**				
TOTAL				

Specially equipped microcomputers: How many of the microcomputers listed above are or will be specially equipped as follows:

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_____ 4. PERFORMED BY A LOCAL COMMERCIAL SHOP
_____ 5. PERFORMED BY A COMMERCIAL SHOP IN ANOTHER CITY OR TOWN
_____ 6. OTHER (specify)_____

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3. NO ACCESS. They can only use a microcomputer during class time in conjunction with certain specific classes →		

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	<20%	21 - 40%	41 - 60%	61 - 80%	>81%
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2. Percentage that WILL take keyboarding next year →					
3. Percentage you believe SHOULD take keyboarding →					

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	using this year	will use next year	should be used
1. INTEGRATED SOFTWARE PACKAGE	☐	☐	☐
2. WORD PROCESSING PACKAGE	☐	☐	☐
3. SPREADSHEET PACKAGE	☐	☐	☐
4. DATA BASE MANAGEMENT PACKAGE	☐	☐	☐
5. COMMUNICATIONS PACKAGE including electronic mail and/or data transfer	☐	☐	☐
6. SCHOOL SCHEDULING PACKAGE	☐	☐	☐
7. GRADE/ATTENDANCE RECORDING	☐	☐	☐
8. SCHOOL ACCOUNTING	☐	☐	☐
9. SCHOOL TIMETABLING	☐	☐	☐
10. SCHOOL BUS SCHEDULING	☐	☐	☐

STAFF TRAINING IN THE USE OF MICROCOMPUTERS

Estimate what proportion of your staff have had training in the uses of microcomputers in education as the result of each of the following. CHECK OFF AS MANY AS IS APPROPRIATE.

	PROPORTION OF STAFF MOST	SOME	NONE
1. BY PARTICIPATING IN SCHOOL WORKSHOPS	☐	☐	☐
2. BY PARTICIPATING IN DISTRICT SPONSORED WORKSHOPS	☐	☐	☐
3. AS THE RESULT OF ONE UNIVERSITY OR COLLEGE COURSE	☐	☐	☐
4. AS THE RESULT OF TWO UNIVERSITY OR COLLEGE COURSES	☐	☐	☐
5. AS THE RESULT OF THREE OR MORE UNIVERSITY OR COLLEGE COURSES	☐	☐	☐
6. AS THE RESULT OF OTHER FORMAL TRAINING specify:_____	☐	☐	☐
7. SELF-TAUGHT	☐	☐	☐

ADDITIONAL TRAINING NEEDS

What additional training in the use of microcomputers in education do you believe that your staff needs? **Check as many items as necessary.**

	PROPORTION OF STAFF MOST	SOME	NONE
1. INTRODUCTORY COMPUTER LITERACY →	☐	☐	☐
2. HOW TO USE PRODUCTIVITY SOFTWARE →	☐	☐	☐
3. COMPUTER PROGRAMMING →	☐	☐	☐
4. INTEGRATION OF COMPUTERS INTO THE CURRICULUM →	☐	☐	☐
5. OTHER (Specify_____) →	☐	☐	☐

PRE-SERVICE TRAINING

In your opinion, what is the minimum amount of pre-service training in instructional uses of microcomputers do prospective teachers need?

	check
1. ONE UNIVERSITY/COLLEGE COURSE →	☐
2. TWO UNIVERSITY/COLLEGE COURSES →	☐
3. THREE OR MORE UNIVERSITY/COLLEGE COURSES →	☐
4. INTEGRATION OF MICROCOMPUTER USES IN "TEACHING METHODS" COURSES →	☐

BUILDINGS AND FACILITIES

Please indicate, by placing checkmarks in the appropriate areas, which of the following items related to school facilities for microcomputers you feel are problems or items of concern in your school.

	LEVEL OF IMPORTANCE low	medium	high
1. Determining an appropriate location for microcomputers →	☐	☐	☐
2. Providing adequate access to microcomputers →	☐	☐	☐
3. Determining an appropriate spatial layout for the microcomputer facility →	☐	☐	☐
4. Providing adequate environmental conditions for the microcomputers →	☐	☐	☐
5. Providing adequate physical security for the microcomputers →	☐	☐	☐
6. Providing storage for microcomputer related equipment and supplies →	☐	☐	☐
7. Procuring adequately designed workstations →	☐	☐	☐
8. Providing telecommunication links →	☐	☐	☐
9. Providing display monitors and screens for classroom demonstration →	☐	☐	☐
10. Meeting power requirements for the microcomputers →	☐	☐	☐
11. Maintaining the microcomputers →	☐	☐	☐
12. Procuring and maintaining software →	☐	☐	☐
13. Other (specify)_____ →	☐	☐	☐

ELEMENTARY - JUNIOR HIGH SCHOOL SURVEY

MICROCOMPUTERS IN ALBERTA SCHOOLS - 1986 SURVEY

School name: School code:

Location: Jurisdiction code:

COMPUTER COORDINATOR
If you have formally or informally identified an individual in your school as the "computer coordinator", please enter his or her name and school telephone number:

Name:_____
Phone:_____

TEACHERS USING MICROCOMPUTERS
Please list the names and areas of specialization of up to three teachers on your staff who in your opinion are making extensive use of computers in their classes:

Name:_____ Area:_____ Grade:____
Name:_____ Area:_____ Grade:____
Name:_____ Area:_____ Grade:____

School population and grades taught:

	Sept 1 1985	Sept 1 1986		Sept 1 1985	Sept 1 1986
Approx. No. of certificated staff(excluding ECS):			Approx. No. of ECS staff:		
Approx. No. of students(excluding ECS):			Approx. No. of ECS students:		
Lowest grade taught:			Highest grade taught:		

Microcomputer inventory (effective January 1, 1986):

	TOTAL reported on Jan. 1/85	TOTAL Number on Jan. 1/86	NEW ONES to be added in 1986	IDEAL Number
1. **APPLE II type** incl. Franklin, Circle, or other compatible				
2. **APPLE Macintosh type** incl Lisa				
3. **COMMODORE type** incl. 2001, 8032 and Superpet series but not IBM compatibles				
4. **COMMODORE VIC 20**				
5. **IBM TYPE** incl. PC, XT, AT, Sperry, Olivetti, or other IBM compatibles				
6. **RADIO SHACK TYPE** incl. model 1, 3, 4 and 100 but not IBM compatibles				
7. **OTHERS** Texas Inst. Acorn, Icon, etc.				
TOTAL				

Location of microcomputers in the school:

	TOTAL reported on Jan. 1/85	TOTAL Number on Jan. 1/86	NEW ONES to be added in 1986	IDEAL Number
1. General purpose microcomputer lab				
2. Resource room/library				
3. Teacher's classroom				
4. Industrial Arts				
5. School Administration Office				
6. Transported from room to room				
7. Other areas in the school				
TOTAL				

Specially equipped microcomputers: How many of the microcomputers listed above are or will be specially equipped as follows:

	No. reported Jan. 1/85	No. on Jan 1/86	No. new ones in 86	Ideal number
1. Microcomputers equipped with a special "chip" to generate French characters →				
2. Microcomputers equipped with a special attachment to permit use by physically disadvantaged students →				

MICROCOMPUTER EQUIPMENT MAINTENANCE

How have you arranged to take care of maintenance and repair of microcomputer equipment located in your school? Please check only the ONE item which BEST describes your situation.

_____ 1. PERFORMED BY A TEACHER IN THE SCHOOL
_____ 2. PERFORMED BY THE COMPUTER COORDINATOR IN THE SCHOOL
_____ 3. PERFORMED BY A MAINTENANCE PERSON AT CENTRAL OFFICE
_____ 4. PERFORMED BY A LOCAL COMMERCIAL SHOP
_____ 5. PERFORMED BY A COMMERCIAL SHOP IN ANOTHER CITY OR TOWN
_____ 6. OTHER (specify)_____

ACCESS TO MICROCOMPUTERS

To what extent do students and teachers have access to microcomputers beyond normal class times?

	ACCESS BY STUDENTS	ACCESS BY TEACHERS
1. EASY ACCESS. They can get to use a microcomputer any time during the school day. →		
2. LIMITED ACCESS. They can use a microcomputer only on specified days and/or during specified hours of the day. →		
3. NO ACCESS. They can only use a microcomputer during class time in conjunction with certain specific classes →		

Keyboarding

Estimate the percentage of students in your school who are or will be taking one or more courses in keyboarding during the current school year. Then estimate the percentage of students who will be taking keyboarding courses next year. Finally, indicate what percentage of the students in your school you believe **SHOULD** be taking keyboarding courses in an ideal situation. Indicate your choice by placing checkmarks in the appropriate boxes.

	<20%	21 - 40%	41 - 60%	61 - 80%	>81%
1. Percentage NOW taking a course in keyboarding →					
2. Percentage that WILL take keyboarding next year →					
3. Percentage you believe SHOULD take keyboarding →					

ADMINISTRATIVE USE OF PRODUCTIVITY SOFTWARE

Which of the following types of productivity software software are used by the Principal and his/her staff for school administrative purposes in your school?

	using this year	will use next year	should be used
1. INTEGRATED SOFTWARE PACKAGE	☐	☐	☐
2. WORD PROCESSING PACKAGE	☐	☐	☐
3. SPREADSHEET PACKAGE	☐	☐	☐
4. DATA BASE MANAGEMENT PACKAGE	☐	☐	☐
5. COMMUNICATIONS PACKAGE including electronic mail and/or data transfer	☐	☐	☐
6. SCHOOL SCHEDULING PACKAGE	☐	☐	☐
7. GRADE/ATTENDANCE RECORDING	☐	☐	☐
8. SCHOOL ACCOUNTING	☐	☐	☐
9. SCHOOL TIMETABLING	☐	☐	☐
10. SCHOOL BUS SCHEDULING	☐	☐	☐

STAFF TRAINING IN THE USE OF MICROCOMPUTERS

Estimate what proportion of your staff have had training in the uses of microcomputers in education as the result of each of the following. CHECK OFF AS MANY AS IS APPROPRIATE.

	PROPORTION OF STAFF MOST	SOME	NONE
1. BY PARTICIPATING IN SCHOOL WORKSHOPS	☐	☐	☐
2. BY PARTICIPATING IN DISTRICT SPONSORED WORKSHOPS	☐	☐	☐
3. AS THE RESULT OF ONE UNIVERSITY OR COLLEGE COURSE	☐	☐	☐
4. AS THE RESULT OF TWO UNIVERSITY OR COLLEGE COURSES	☐	☐	☐
5. AS THE RESULT OF THREE OR MORE UNIVERSITY OR COLLEGE COURSES	☐	☐	☐
6. AS THE RESULT OF OTHER FORMAL TRAINING specify:_____	☐	☐	☐
7. SELF-TAUGHT	☐	☐	☐

ADDITIONAL TRAINING NEEDS

What additional training in the use of microcomputers in education do you believe that your staff needs? **Check as many items as necessary.**

	PROPORTION OF STAFF MOST	SOME	NONE
1. INTRODUCTORY COMPUTER LITERACY →	☐	☐	☐
2. HOW TO USE PRODUCTIVITY SOFTWARE →	☐	☐	☐
3. COMPUTER PROGRAMMING →	☐	☐	☐
4. INTEGRATION OF COMPUTERS INTO THE CURRICULUM →	☐	☐	☐
5. OTHER (Specify_____) →	☐	☐	☐

PRE-SERVICE TRAINING

In your opinion, what is the minimum amount of pre-service training in instructional uses of microcomputers do prospective teachers need?

	check
1. ONE UNIVERSITY/COLLEGE COURSE →	☐
2. TWO UNIVERSITY/COLLEGE COURSES →	☐
3. THREE OR MORE UNIVERSITY/COLLEGE COURSES →	☐
4. INTEGRATION OF MICROCOMPUTER USES IN "TEACHING METHODS" COURSES →	☐

BUILDINGS AND FACILITIES

Please indicate, by placing checkmarks in the appropriate areas, which of the following items related to school facilities for microcomputers you feel are problems or items of concern in your school.

	LEVEL OF IMPORTANCE low	medium	high
1. Determining an appropriate location for microcomputers →	☐	☐	☐
2. Providing adequate access to microcomputers →	☐	☐	☐
3. Determining an appropriate spatial layout for the microcomputer facility →	☐	☐	☐
4. Providing adequate environmental conditions for the microcomputers →	☐	☐	☐
5. Providing adequate physical security for the microcomputers →	☐	☐	☐
6. Providing storage for microcomputer related equipment and supplies →	☐	☐	☐
7. Procuring adequately designed workstations →	☐	☐	☐
8. Providing telecommunication links →	☐	☐	☐
9. Providing display monitors and screens for classroom demonstration →	☐	☐	☐
10. Meeting power requirements for the microcomputers →	☐	☐	☐
11. Maintaining the microcomputers →	☐	☐	☐
12. Procuring and maintaining software →	☐	☐	☐
13. Other (specify)_____ →	☐	☐	☐

ELEMENTARY - JUNIOR HIGH - SENIOR HIGH
SCHOOL SURVEY

MICROCOMPUTERS IN ALBERTA SCHOOLS - 1986 SURVEY

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6. **RADIO SHACK TYPE** incl. model 1, 3, 4 and 100 but not IBM compatibles →				
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TOTAL →				

Location of microcomputers in the school:

	TOTAL reported on Jan. 1/85	TOTAL Number on Jan. 1/86	NEW ONES to be added in 1986	IDEAL Number
1. Business Educ. classroom/lab. →				
2. General purpose microcomputer lab →				
3. Resource room/library →				
4. Teacher's classroom →				
5. Industrial Arts →				
6. School Administration Office →				
7. Transported from room to room →				
8. Other areas in the school →				
TOTAL →				

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	using this year	will use next year	should be used
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2. WORD PROCESSING PACKAGE	☐	☐	☐
3. SPREADSHEET PACKAGE	☐	☐	☐
4. DATA BASE MANAGEMENT PACKAGE	☐	☐	☐
5. COMMUNICATIONS PACKAGE including electronic mail and/or data transfer	☐	☐	☐
6. SCHOOL SCHEDULING PACKAGE	☐	☐	☐
7. GRADE/ATTENDANCE RECORDING	☐	☐	☐
8. SCHOOL ACCOUNTING	☐	☐	☐
9. SCHOOL TIMETABLING	☐	☐	☐
10. SCHOOL BUS SCHEDULING	☐	☐	☐

STAFF TRAINING IN THE USE OF MICROCOMPUTERS

Estimate what proportion of your staff have had training in the uses of microcomputers in education as the result of each of the following. CHECK OFF AS MANY AS IS APPROPRIATE.

	PROPORTION OF STAFF MOST	SOME	NONE
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2. BY PARTICIPATING IN DISTRICT SPONSORED WORKSHOPS	☐	☐	☐
3. AS THE RESULT OF ONE UNIVERSITY OR COLLEGE COURSE	☐	☐	☐
4. AS THE RESULT OF TWO UNIVERSITY OR COLLEGE COURSES	☐	☐	☐
5. AS THE RESULT OF THREE OR MORE UNIVERSITY OR COLLEGE COURSES	☐	☐	☐
6. AS THE RESULT OF OTHER FORMAL TRAINING specify:_____	☐	☐	☐
7. SELF-TAUGHT	☐	☐	☐

ADDITIONAL TRAINING NEEDS

What additional training in the use of microcomputers in education do you believe that your staff needs? **Check as many items as necessary.**

	PROPORTION OF STAFF MOST	SOME	NONE
1. INTRODUCTORY COMPUTER LITERACY →			
2. HOW TO USE PRODUCTIVITY SOFTWARE →			
3. COMPUTER PROGRAMMING →			
4. INTEGRATION OF COMPUTERS INTO THE CURRICULUM →			
5. OTHER (Specify_____) →			

PRE-SERVICE TRAINING

In your opinion, what is the minimum amount of pre-service training in instructional uses of microcomputers do prospective teachers need?

	check
1. ONE UNIVERSITY/COLLEGE COURSE →	
2. TWO UNIVERSITY/COLLEGE COURSES →	
3. THREE OR MORE UNIVERSITY/COLLEGE COURSES →	
4. INTEGRATION OF MICROCOMPUTER USES IN "TEACHING METHODS" COURSES →	

BUILDINGS AND FACILITIES

Please indicate, by placing checkmarks in the appropriate areas, which of the following items related to school facilities for microcomputers you feel are problems or items of concern in your school.

	LEVEL OF IMPORTANCE low	medium	high
1. Determining an appropriate location for microcomputers →			
2. Providing adequate access to microcomputers →			
3. Determining an appropriate spatial layout for the microcomputer facility →			
4. Providing adequate environmental conditions for the microcomputers →			
5. Providing adequate physical security for the microcomputers →			
6. Providing storage for microcomputer related equipment and supplies →			
7. Procuring adequately designed workstations →			
8. Providing telecommunication links →			
9. Providing display monitors and screens for classroom demonstration →			
10. Meeting power requirements for the microcomputers →			
11. Maintaining the microcomputers →			
12. Procuring and maintaining software →			
13. Other (specify)_____ →			

APPENDIX B

LIST OF PARTICIPATING SCHOOL JURISDICTIONS

JURISDICTION CODE	JURISDICTION NAME	NUMBER OF SCHOOLS RESPONDING	NUMBER OF SCHOOLS NOT RESPONDING
1010	Berry Creek SD	2	0
1020	Cardston SD	18	1
1030	Medicine Hat SD	10	0
1040	Taber SD	12	1
1050	Acadia SD	8	0
1060	Rangeland SD	6	0
1070	Peace River SD	12	1
1080	Yellowhead SD	13	5
1090	Rocky Mountain SD	6	4
1100	Neutral Hills SD	3	1
1110	Sturgeon SD	11	0
1120	Willow Creek SD	14	2
1130	Pincher Creek SD	7	0
1140	Starland SD	4	3
1150	Wainwright SD	5	2
1160	Provost SD	5	3
1170	Westlock SD	8	3
1180	Foothills SD	16	3
1190	Rockyview SD	23	3
1210	Spirit River SD	8	1
1220	High Prairie SD	11	3
1230	Fairview SD	5	3
1240	Lac La Biche SD	6	1
1250	Fort Vermilion SD	7	7
1260	East Smokey SD	5	2
1270	Three Hills SD	9	1
1280	Northland SD	19	7
1290	Drumheller Valley SD	2	3
1300	Crowsnest Pass SD	3	1
1310	Mount Rundle SD	3	0
2010	Cty of Grande Prairie	15	0
2020	Cty of Vulcan	9	3
2030	Cty of Ponoka	8	3
2040	Cty of Newell	12	1
2050	Cty of Warner	15	2
2060	Cty of Stettler	11	11
2070	Cty of Thorhild	4	0
2080	Cty of Forty Mile	12	12
2090	Cty of Beaver	6	2
2100	Cty of Wetaskiwin	11	1
2110	Cty of Barrhead	7	0
2120	Cty of Athabasca	7	0
2130	Cty of Smoky Lake	4	1
2140	Cty of Lacombe	13	0

JURISDICTION CODE	NAME	NUMBER OF SCHOOLS RESPONDING	NOT RESPONDING
2150	Cty of Wheatland	15	0
2160	Cty of Mountain View	10	0
2170	Cty of Paintearth	6	1
2180	Cty of St. Paul	6	1
2190	Cty of Strathcona	25	5
2200	Cty of Two Hills	6	0
2210	Cty of Camrose	10	1
2220	Cty of Red Deer	14	0
2230	Cty of Vermilion River	8	3
2240	Cty of Leduc	19	3
2250	Cty of Lethbridge	17	1
2260	Cty of Minburn	9	1
2270	Cty of Lac Ste Anne	9	1
2280	Cty of Flagstaff	11	0
2290	Cty of Lamont	6	0
2300	Cty of Parkland	24	2
3010	St. Albert SD	7	0
3020	Edmonton SD	171	15
3030	Calgary SD	189	19
3040	Lethbridge SD	15	1
3050	Medicine Hat SD	16	1
3060	Banff SD	2	0
3070	Red Deer SD	21	1
3100	Wetaskiwin SD	6	0
3110	Stirling SD	1	0
3130	Camrose SD	6	0
3140	Stettler SD	2	1
3150	Exshaw SD	1	0
3160	Legal SD	1	0
3200	Brooks SD	6	0
3220	St. Paul SD	1	1
3230	Redcliff SD	2	1
3240	Grande Prairie SD	8	0
3255	Whitecourt SD	2	1
3260	Fort McMurray SD	12	1
3280	Jasper SD	2	0
3320	Waterton Parks SD	0	1
3340	Grovedale SD	1	0
3350	Devon SD	3	0
3360	Ralston DND District	1	0
3370	Canadian Forces Base SD	3	1
3380	Mynarsky Park SD	1	0
3390	Medley SD	4	0
3430	Swan Hills SD	1	0
3450	Grande Cache SD	2	1
3460	Lakeland SD	10	2

JURISDICTION CODE	NAME	NUMBER OF SCHOOLS RESPONDING	NOT RESPONDING
4010	Calgary RCSSD	57	9
4020	Edmonton RCSSD	79	4
4030	Lethbridge RCSSD	7	0
4040	Wetaskiwin RCSSD	2	0
4050	Vegreville RCSSD	2	0
4060	Red Deer RCSSD	7	0
4070	Pincher Creek RCSSD	1	0
4080	Medicine Hat RCSSD	7	1
4090	Theresetta RCSSD	0	1
4100	Drumheller RCSSD	1	0
4105	Lakeland RCSSD	5	0
4110	Fort Vermilion RCSSD	0	1
4130	Grande Prairie RCSSD	5	1
4135	Stony Plain RCSSD	1	0
4140	McLennan RCSSD	1	0
4150	Wainwright RCSSD	1	0
4155	Edson RCSSD	1	0
4160	Fort McMurray RCSSD	7	1
4170	Fairview RCSSD	1	0
4175	Hinton RCSSD	1	0
4180	Spirit River RCSSD	1	0
4190	Manning RCSSD	0	1
4210	Peace River RCSSD	2	0
4240	Killam RCSSD	1	0
4250	Assumption RCSSD	1	0
4260	Sexsmith RCSSD	0	1
4270	Taber RCSSD	2	0
4280	High Prairie RCSSD	1	0
4320	Camrose RCSSD	0	2
4370	Provost RCSSD	1	0
4390	Beaverlodge RCSSD	1	0
4420	Coaldale RCSSD	1	0
4480	Picture Butte RCSSD	1	0
4500	Bow Island RCSSD	1	0
4520	Valleyview RCSSD	1	0
4550	Grimshaw RCSSD	1	0
4570	Whitecourt RCSSD	2	0
4580	Ponoka RCSSD	1	0
4590	Nampa RCSSD	1	0
4600	Vermilion RCSSD	1	0
4670	Fort Saskatchewan RCSSD	2	1
4680	Sherwood Park RCSSD	6	1
4720	Westlock RCSSD	1	0
4730	Drayton Valley RCSSD	1	0
4900	Spruce Grove RCSSD	1	1
4930	Rocky Mountain RCSSD	1	0
4940	Leduc RCSSD	2	0

JURISDICTION CODE	NAME	NUMBER OF SCHOOLS RESPONDING	NOT RESPONDING
5010	Barons Consolidated SD	2	0
5030	Falher Consolidated SD	1	0
6010	Thibault Consolidated SD	3	0
7010	Glen Avon PSSD	1	0
7020	St. Albert PSSD	11	1
8010	St. Paul Regional SD	1	0
9003	Federally Administered Schools	15	7